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THE

VICTORIAN NATURALIST:

THE JOURNAL & MAGAZINE

OF THE

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Field Naturalists' Club of Victoria

VOL. II.

MAY 1885 TO APRIL 1886.

*The Author of each Article is responsible for the facts
and opinions he records.*

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INDEX TO VICTORIAN NATURALIST.

VOL II.

	PAGE
Australia, Darwin on -	20
Australian Birds, Oology of	126
Ballarat Field Club -	43
Basalt-Vitrophyr, Notes on a	67
Birds, Notes on Habits of	
Native	90, 104, 140, 154
Botany, <i>Wormia</i>	
<i>Macdonaldi</i> - -	146
Chudleigh Caves, Trip to	
the - - -	59
Coccidæ, Remarks on	
Victorian Gall-Making	99
Cockatoos and Magpies	
Habits of - -	154
Collector's Trip to North	
Queensland	109, 130, 139
Correspondence -	63, 92
Anecdote of Duckling	64
Attempt to rear Cuckoo	63
Preserving Mixture -	92
Crows, Notes on Habits of	
	90, 104, 140
Darwin on Australia -	20
Errata - -	28, 40, 92
Eucalypts, Sanitary	
Properties of - -	84
Field Naturalists' Club	
Annual Conversazione	2
Exhibits - - -	15
Lecturette, Extinct	
Animals - - -	13
Insects - - -	14
President's Address -	3
Excursions - -	31, 33, 94
Brighton - - -	31
Lal Lal - - -	94
Lilydale - - -	33
Exhibition of Wild Flowers	82

	PAGE
Proceedings, Monthly	
Meetings, 1, 17, 29, 41,	
53, 65, 81, 93, 105, 125,	
137, 149	
Flora, Additions to	
Queensland - -	74
Fungi of North Gippsland	106
Fungi, Victorian	76, 139
Geological Sketch of S.	
W. Victoria	70, 102, 114
New Guinea Plants,	
Notes on - -	19, 146
Notes	
Catalogue of Australian	
Hydroid Zoophytes	148
Foraminifera -	28
Micro-Fungi -	40
National Museum -	40
Petrel Family -	28
Select Extra-Tropical	
Plants - -	52, 147
Oology of Australian	
Birds - - -	126
Orchids of Victoria	48, 142
Corysanthes -	144
Microtis - -	142
Prasophyllum -	48
Pterostylis - -	145
Plants, New Guinea	19, 146
Plants of Studley Park	24, 36
Queensland Flora,	
Additions to - -	74
Queensland North,	
Trip to - -	109, 130, 139
Studley Park, Plants of	24, 36
Tortoises, Note on	
Imbedded - -	103
Victoria, Geological Sketch	
of S. W.	70, 102, 114
Victorian Fungi	76, 106, 139
Wild Flowers, Exhibition of	82
Wilson's Promontory, Over-	
land Trip to	43, 54, 87, 150

ERRATA.

Page 27, line 19—for “Flowers September to January” read “Flowers nearly all the year round.”

Page 27, line 43—after “*Casuarina*, *Rumphius*, *Etym.*” read “Supposed to allude to the leaves resembling the feathers of the Cassowary.”

Page 69, line 29—insert “of the” after “felspar.”

Page 69, last line—for “Weannie” read “volcanic.”

Page 93, last line—after “lizard” add “*Grammatophora muricata*.”

Page 94, line 22—after “lizard” add “*Pygopus lepidopus*.”

Page 137, last line—after “and” insert “some of.”

NOTICE TO BINDER.

No. 11, March 1886, is wrongly paged. Should read 137 to 148, instead of 125 to 136.

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MAY 1885.

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CONTENTS:

	PAGE
Proceedings of the Field Naturalists' Club of Victoria	1
Annual Conversazione.	2
President's Address.	3

PRICE—SIXPENCE

Emerald Hill;
J. C. MITCHELL, PRINTER, CLARENDON ST.
1885.

Field Naturalists' Club of Victoria.

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Time of Ordinary Meetings—The Second Monday in each Month,
at 8 p.m., Royal Society's Hall, Melbourne.

Subscription - - - - Ten Shillings per annum.

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THE

Victorian Naturalist:

VOL. 2. No. 1.

MAY.

1885.

THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 13th April, 1885.

The president, Rev. J. J. Halley, occupied the chair, and about forty-five members and visitors were present.

The hon. librarian reported the receipt of the following additions to the Club's library:—"Science Record," No. 3; "Report of Ballarat School of Mines," 1883; "Proceedings of Ornithological Society of Vienna;" "Supplement to Victorian Oology," Part 1, by A. J. Campbell.

The hon. sec. read the report of the sub-committee appointed to re-consider the list of Victorian birds proposed to be protected. It recommended that the following birds be struck out of the proposed list:—Hawks, bee-eaters, crow shrikes (except magpie, at present protected), finches, bower-birds, orioles, wattle-birds, leather-heads, and parrots (except swamp or ground parrakeet.) On the motion of Mr. Gregory, the consideration of the report was postponed till next meeting, pending replies from other societies, &c.

The hon. sec. read a short account of the excursion to Gipsy Village, Brighton, held on the previous Saturday, which had been well attended, and the members present were fairly successful in their finds. The rare orchids, *Eriochilus fimbriatus* and *Pterostylis apyhlia*, being obtained in bloom.

The following ladies and gentlemen were elected members of the Club:—Mrs. Beal, Mrs. C. W. Simson, Miss E. C. Simson, Messrs A. Campbell, J. P. Chirnside, R. A. Poole, and J. Russell, and Masters S. and D. Coghill, as junior members. Thirteen nominations were received for next meeting.

Messrs A. J. Campbell and J. E. Prince were elected to audit the accounts of the Club previous to the annual meeting.

Nominations for office-bearers for the year 1885-6 were then received, in each case the retiring office-bearers being the only persons nominated, except for hon. treasurer, for which Mr. Bage was nominated instead of Mr. Matthias. Three ladies and eight gentlemen were proposed as members of committee, being, Mrs. Dobson, Mrs. J. Simson, Miss Campbell, and Messrs Best, Gatliff, Hill, Le Soüef, Prince, Topp, Watts, and Wisewould. Mr. Best gave notice that he would move at the annual meeting that the number of members of committee be increased from five to eight.

Mr. J. E. Prince, on behalf of Messrs Field and Son, of Birmingham, presented the Club with a valuable microscope for the use of the members, for which a hearty vote of thanks was tendered to him.

The hon. sec. announced that at the annual conversazione to take place on the 29th inst, lecturettes would be delivered by the Rev. A. W. Cresswell, M. A., on "The Extinct Animals of Australia;" and by himself on "Forms and Metamorphoses of Insects."

Papers read:—By Messrs Gregory and Lucas "Notes of an overland trip to Wilson's Promontory," Part I. Mr. Gregory read the descriptive part and Mr. Lucas the Natural History notes of the journey between the Trafalgar Railway Station and Mr. Mille's station at Yanakie, about two thirds of the distance travelled

The following were the principal exhibits of the evening:—By Mr. G. Coghill, five orchids in bloom, obtained on excursion to Gipsy Village, viz., *Eriochilus autumnalis*, *E. fimbriatus*, *Pterostylis aphylla*, *P. nana*, and *Prasophyllum Archeri*; by Mr. C. French, 260 species of Australian Coleoptera, family Buprestidæ, also orchids in bloom *Eriochilus fimbriatus* and *Pterostylis aphylla*; by Master C. French, carved gourd, from New Guinea; by Mr. G. R. Hill and Masters Hill, Victorian lepidoptera; by Mr. D. Le Soüef, living slow-worm; by Mr. T. A. Forbes-Leith, five British Birds, Rook, Common Gull, Black-headed Gull, Curlew, and Oystercatchers, also pair of Opossum mice; and by Mr. F. Reader, plants from Studley Park, (orders *Apocynæ*, *Solanacæ*).

After the usual *conversazione* the meeting terminated.

FIELD NATURALISTS' CLUB OF VICTORIA.

ANNUAL CONVERSAZIONE.

THE Fifth Annual Conversazione of the Club was held at the Royal Society's Hall on Wednesday evening, 29th April, 1885,

when there was a very large attendance of the members and their friends, it being estimated that over 350 ladies and gentlemen were present.

On their arrival the visitors rambled through the lower rooms of the building, which contained a very fine display of objects of natural history both living and dead. The tables were arranged on a much better plan than last year, and allowed greater facilities for studying the many excellent and beautiful exhibits, which will be fully detailed further on. Prominent among these may be noticed the magnificent collection of Australian parrots, shown by Mr. T. A. Forbes-Leith, the case containing representatives of 65 species; the many rare beetles, butterflies, and moths exhibited by Mr. C. French; the fine collections of shells by Messrs Gatliff and Worcester; the lepidoptera of Mr. Kershaw; the Australian coleoptera of Mr. Best; the Victorian sponges by Mr. Lucas; the live snakes by Mr. D. Le Souëf; the rare plants by Baron von Mueller; and the growing Victorian ferns by Mr. F. G. A. Barnard.

After a pleasant half-hour among the birds, insects, etc., the visitors assembled in the upper hall to hear the Rev. J. J. Halley deliver the presidential address, which was as follows:—

LADIES AND GENTLEMEN, MEMBERS OF THE FIELD NATURALIST
CLUB OF VICTORIA,

In the address, which custom assigns to the President of a society like ours, at its annual gathering an opportunity is given for a deliverance on any great subject that may have agitated intellectual society, or work done may be reviewed, or suggestions for future operations may be advanced. But before I attempt to do my poor part in any one of these directions it must be mine to thank my fellow-members for the very high honour they have conferred upon me in unanimously and cordially electing me to be their President—an honour alike unsought and unwished for. Ladies and gentlemen, while I thank you for this honour, I think that you have made a mistake. Your President should be one who, in the arena of science, has won his knightly spurs like my learned predecessors, Professor Mc'Coy and Dr. Dobson, rather than one who pretends to be but an esquire, achieving no conquests for himself, but merely bearing arms after nobler combatants. I may, at any rate, congratulate our Club on the pleasant and prosperous year that now draws to a close. Our meetings have been always interesting and instructive, and sometimes specially so. Rare and costly specimens in all departments of natural history have graced our exhibitions. Papers not unworthy of more ambitious societies have been read, honest work in the field has been done, and we number in our guild 160 ladies and gentlemen.

Nor need we fail to congratulate ourselves that, of the learned societies of Victoria, we have been the first to recognise that there are priestesses worshipping in the temple of Nature. Other societies have invited ladies to grace and add sweetness and lustre to annual gatherings, or occasionally, in a kind of superior patronising way, have arranged special evenings when more serious work was dispensed with, and curious or pretty things were shown or said, fitted to what was evidently deemed the taste of weaker intellects, but not only thus we meet on gala days in festive dress, but to share with us in honourable toil, side by side to delve in intellectual mines—to make common explorations into undiscovered lands of science—to strive to make nature give up her secrets, recognising in the fullest sense a common inheritance and a common right. The roll of our membership bears the names of 20 sisters of science. With the higher education of women an accomplished fact, with a girls' college in this city distancing in matriculation honours all the boys' grammar schools and colleges, I am sure of this, that whether we men will or will not, sooner or later we shall have to open, without distinction of sex, the doors of all our intellectual and scientific societies, and I trust that it will be our privilege, before many years have passed, to listen to this annual address delivered by one of the sisterhood of our guild.

It is evident that this action of ours looks far beyond the mere admission of ladies to our meetings, and it is for this that I dwell upon it, for we cannot but recognise that it must play no unimportant part in what may be called "the domestication of science." We may be thankful that at last, however inadequately, natural science forms a part of the curriculum of most of our higher schools. The more common phenomena of nature are, at any rate, investigated and explained, and principles are more or less discussed. Collections of fauna and flora are common in our homes. Microscopes are found in nearly all studies. The happy home is certainly the intelligent home—the home where each member is able to add something to the common stock of thought and knowledge, and, as has been said, "where the family does not consist of an ill-assorted aggregation of babies, great and small, dependent for their amusement upon some rattle of frivolity, or the chance of a stranger tickling them with a fashionable straw." The increase of our intelligent and happy homes has been brought about by the increase of our intelligent mothers and sisters. Cynics will, doubtless, say that the majority of our young men care far more for sport than science, for cricket than for conchology, for football than for floriculture, for rifles than for reflection; and that mothers must bring up girls to suit the taste of the market, whatever it may be—if the demand be for frivolity, frivolity must be

produced ; if for stupidity, stupidity must be forthcoming. We may hope that the cynic's sneer is fast losing its sting—that the demand for frivolity, ignorance, or stupidity is getting to be at a discount ; and to the women of our own day, members of our Club or not, we will quote the words of that great master of science, Sir Humphrey Davy, in an appeal to women made seventy-four years ago : “ Let them make it disgraceful for men to be ignorant, and ignorance will perish ; and that part of their empire founded upon mental improvement will be strengthened and exalted by time, will be untouched by age, will be immortal in its youth.” Of all schools of knowledge after those of music, painting, and sculpture, natural science is the best adapted for domestication. Some departments of intellectual investigation seem to adapt themselves more to the study than the parlour—to invite their devotees to solitude rather than to company ; but the pleasure of a discovery in the world of nature is more than doubled by being shared ; and the pathway to its mountain heights is made easy when travelled in company. In this colony of ours, with all its exuberance of youth, with all its free, wild life, with all its deification of manly sports, the domestication of science will help to teach

That life is not an idle ore,
But iron dug from central gloom,
And heated hot with burning fears,
And dipt in baths of burning tears,
And batter'd with the shocks of doom.

We have fallen on utilitarian days. Societies have to show that they have a right to existence ; a *raison d'être* is demanded from all. Our answer to the challenge thrown down then is, that we exist for the purpose of popularising science—of fostering a love for nature—not by the mere study of what other men have seen or the examination of theories propounded by the giants of our race—but by examination for ourselves in the field. Not that the study of books is to be neglected—none of us can afford to do that—but to use our book knowledge as a guide to our field investigation, and by actual observation for ourselves to verify or otherwise what books have taught us. In this learning we must be content to be patient, reverant, childlike, not too hasty, from imperfect data, to jump to conclusions—nor yet, when we get undoubted facts, too conservative to give up any pre-conceived opinions or theories. Starting from our books, going into the field, observing, arranging, theorising, we shall need to understand how, on the one hand, to avoid the Scylla of wild speculation, and on the other hand the Charybdis of mere antiquated and worn out belief. The more we learn the more modest we shall doubtless become ; it is the tyros, not the veterans, who are sure about everything—the many times that we have to

modify our opinions will teach as modesty of expression. But if we are true students of nature we shall never tire of listening to her teachings, for she will lead us into a veritable fairyland, and she will tell us wondrous tales. To her children nature is as Longfellow makes her in his poem on the birthday of Agassiz—an old nurse—and she sings to her children thus—

Come, wander with me, she said,
Into regions yet untrod,
And read what is still unread
In the manuscript of God.

And he wandered away, away,
With Nature, the dear old nurse,
Who sang to him night and day
The rhymes of the universe.

And whenever the way seemed long,
Or his heart began to fail,
She would sing a more wonderful song,
Or tell a more wonderful tale.

The study of nature is no longer a hidden mystery, to be unveiled only to a few initiated ones. The days when the goddess was carefully hidden from the gaze of the common people, guarded by priests, jealous lest any save themselves should behold the Deity, have passed away. Isis has been unveiled, and all who will may, by living study, enter into the most secret recesses of the fane. Again, then, we affirm the aim of our Club is the popularisation and domestication of science.

I ask, next, what are the facilities afforded for the study of natural science in this colony of ours? The wisdom of the founders of institutions in this young land has been shown by the liberality with which provision has been made for the study of art and science. Our public library, our picture gallery, our botanical gardens, zoological gardens, and museums are the pride of our city, and a wonder to those who remember that not a century has passed since one was "first to sail into a silent sea," and barely fifty years since white men made a home where our stately city now stands. That these liberal provisions were made none too soon is evidenced by the fact that there is hardly a literary or a scientific society of the old land that does not find its counterpart here, and it is indeed to be hoped that Australia's children may not only hold their own in the cricket field, not only fight side by side on Africa's sands with England's sturdiest, fired by a noble, if, perchance, a somewhat wild ambition, but also win their laurels in the arena of literature, science, and art.

As I have already intimated, the first need of a student is books—books to guide him in the way he wants to travel. Of manuals

dealing generally with scientific subjects or treating of great principles our private and public libraries are well supplied. Botanical and zoological text books are not difficult to obtain, but what we do need is books dealing specifically with the various departments of fauna and flora as they are found in this colony. This need was pointed out by my learned predecessor in this chair, Dr. Dobson, who last year pleaded for a "Dichotomous Key to the Plants of the Colony," and so well did Dr. Dobson plead, and so wisely did he act, that the Government Botanist, the Baron von Müller, readily undertook the preparation of such a key, and has, during the past year, given to it much attention, and hopes ere long to have it ready for publication. I understand that this key is to be made as useful as possible in that it will be illustrated. Those of our members who make botany their study are to be congratulated on the prospect of so soon having their labours lightened.

But what Baron von Müller is doing for plants is much needed in all departments. Our students find it very difficult to learn what objects have or what have not been described. A strange shell, or mollusc, or zoophyte is found, and there is nothing to tell if it be new to science or not; often even its generic place is hard to discover. What we need are monographs or catalogues. So far as one family is concerned, this want has been, during the past year, ably supplied by the publication of a catalogue of "Australian Hydroid Zoophytes." We are indebted for this immense help in the study of forms familiar on all our sea coasts to Mr. W. M. Bale, Secretary of the Microscopical Society of Victoria, and a member of our Club. Mr. Bale has described and figured nearly 200 forms, diligently searching previous records, and so presenting to us a catalogue made up to date. The illustrations, so carefully and accurately lined, will enable, in connection with the descriptions, the observer to identify and name any of the forms that may come under his notice. An introduction of 40 pages gives a sketch of the most important features of the structure and life history of the Hydroid Zoophytes. We cannot, however, while congratulating the author on the useful and important work he has produced, but express our regret that the book is headed "Australian Museum," rather than that of the National Museum of Victoria, and the imprint of Thomas Richards, Government Printer of Sydney, rather than that of John Ferres, Government Printer of Melbourne. It is hardly creditable that the bringing out of an important work on Natural History by a Victorian student should have been undertaken by the Government of another colony.

Nor must I pass without notice a catalogue of the eggs of Victorian birds, by Mr. Campbell, together with a supplement. While Gould left little to do, so far as the birds of Australia are concerned, he was not able, from the comparatively short time he

was in the colonies, to tell us much of the oology of our Aves. Now that students are directing their attention to life histories, a knowledge of embryology has become a matter of great importance, and, in connection with embryology, oology is likely to assist in the elucidation of many mysteries. During the year Prof. M'Coy has been enabled to publish the ninth decade of the "Natural History of Victoria." The first of these decades bears date the 24th June, 1878, so that at the present rate we get the description on an average of fifteen forms a year. Our mathematical friends will be able to calculate at what distant period the memoirs of our museum will be complete, and geologists may perchance dream as to what will be the geological state of our earth when the last plate shall be issued, and how many of the present living forms will then more fitly find a place in a paleontological record. As to the prodromus of the paleontology of Victoria, the last decade bears date 1st of September, 1881. Since that date many collectors of organic remains have been anxiously and patiently waiting for their description. It is much to be regretted that the able and learned professor, whose accurate knowledge none can doubt, is unable, from his numerous and important engagements, more frequently to issue these helpful and beautifully illustrated papers, for it can hardly be that the Government of so wealthy a colony grudges the sum required for their production. True students will, however, battle on with or without aid, and doubtless difficulties will only incite to noble effort.

In this connection I cannot but mention the "Forest Flora of South Australia," by Mr. J. E. Brown, Conservator of Forests in that colony. The size and beauty of the plates will charm all the lovers of our native woodlands. Nor must we forget our own modest manual of the Club's proceedings, "The Victorian Naturalist," of which our first volume has been published, and in which will be found many papers of interest—a baby yet among such like productions, but promising to grow bigger and stronger as members of the Club enrich its pages by their observations, and increase its circulation by their efforts.

Passing from the literature of our subject, we come to collections of specimens alive or dead. The student of animal life can spend many pleasant hours in the zoological collection at the Royal Park, and if he has the good fortune to secure Mr. Le Souef as his guide, philosopher, and friend, his pleasure will be doubled. Whatever blame may possibly, and only possibly, rest on the shoulders of the Acclimatisation Society of Victoria in respect to some of their introductions into the colony, nothing but praise can be awarded to them for the care and enterprise that has been shown in the collection and management of their gardens—gardens that will surely induce a love of natural history in the minds of young

Victorians, but which also prove of great value to the student who wants to study the habits of beasts, birds, and reptiles. However skilful a taxidermist may be, he can never give to his skins the subtle and mysterious quiver of life, so that the student who wants to understand life and its history seeks to learn from living objects, and the gardens of the Acclimatisation Society meet a felt need.

The wealth of our city in this direction has been added to by the opening of the aquarium in the Exhibition Building. It is true that at present but few species have been secured, and that whole classes of marine fauna, such as the *Actinozoa*, that make some of the tanks at Brighton, England, gay as tulip-beds, are conspicuous by their absence, yet enough has been done, and well done, to show what the possibilities are, and doubtless the management, which has made so good a beginning, will not rest till the ichthyologist finds, not only something to amuse, but opportunity for grave study. The names of the inhabitants are well and conveniently set out on the tanks; but, for the sake of the many who have no knowledge at all of fish, it would be well, in cases where more than one species are in the same tank, to give a description, brief but clear, so as clearly to indicate which is which. It is amusing to listen for a little while at one of such tanks, and note the strange guesses made, and the stranger reasons given for the belief entertained.

We have four museums, all of which demand attention, and render aid to the student of natural history, and should enable the collector to name most of his finds, and so to put him in the way of studying correctly life histories. In this way home collections will be more than pretty toys, and the aim of our club and the subject of our paper will begin to be realised—the domestication of natural science.

Of our National Museum, for its large collection and the admirable way in which the taxidermist has arranged many of the groups of birds and animals, we have a just right to be proud. Having visited many of the natural history museums both at home and on the Continent, our own, I can safely say, in many respects, contrasts most favourably with these, in some, carries off the palm for excellency. But there is here yet much to be desired, and a deputation from our Club waited on the trustees of the Library and Museums for the purpose of pointing out to them some requirements. I may mention them here:—

1st. The first great need is more room. Treasures are there, but they cannot be found. Entomolgy is a favourite department of science in this colony, and the collections of insects are numerous. Some enthusiast, proud of his gatherings, makes his way to the National Museum to identify his species. He looks, and often looks in vain. A few cases—many obsolete names—and yet the museum is rich

in such gatherings, only they are stowed away. By the courtesy, indeed, of Mr. Kershaw they may be seen, but the many, I am afraid, do not know the amiability of our fellow-member. The same complaint may be made as to oology. It is believed there is a good oological collection somewhere, but where that somewhere is no ordinary visitor can find out. The *Sauropsida* of Australia form an interesting study, and our museum ought to contain a fairly complete series. But here, too, we look in vain. How beautifully reptilia may be preserved and mounted, and made, instead of repulsive, almost fit for drawing-room ornaments, visitors to the newly established museum at Adelaide can testify. Without further illustration, what is sorely needed at our National Museum is room—room for the arrangement especially of the fauna of Australia—that our museum may not be simply a lounging place for the nursemaids of Carlton, or a show for passing visitors, but a place where our students of nature can find the real helps they need. It has also been pointed out that in many cases the nomenclature is antiquated, and in some cases inconsistent.

2nd. We ask that the overworked learned professor at the head of the museum should have given to him a staff of scientific assistants. Our idea is that, under Professor M'Coy, there should be a number of gentlemen, each one with the care of a department. We could not expect such a list of world-known men as form the staff of the British Museum, nor would it be necessary. There are plenty of young scientists who would be willing to be working heads, and who, under the direction of the professor, would be able to collect, classify, arrange, name, and, in addition, be able—not to waste time by chatting with idle *dilettanti* or answering foolish questions—but to put enquirers into the way of finding solutions to their seekings. No one man can do or ought to try to do everything. Our colony is rich enough, and the students of nature are many enough, to warrant such an arrangement. It would be ungenerous to blame an overworked man, yet it is intolerable that specimens should, in the last two or three years (to my own knowledge), have over and over again been sent to Europe for identification; of such specimens not a few proved new to science. We ought to be able in this colony, at any rate, to classify and name our own natural productions. With increase of room and increase of men the other needs mentioned by our deputation to the museum trustees could easily be met.

Our second museum is the technological one at the Public Library, of which little need be said; it is very useful, so far as it goes. The ethnographical department bids fair to be of much use to those who desire to study Polynesian races—a department that should be much increased by the acquisition of specimens of the dress, arms, implements, and works of art of the aboriginal people

of Australia and Austral Polynesia. Many races seem doomed to extinction; before it is too late let us preserve all we can that may teach us and those who come after us what sort of men they were.

The last born of our natural collections is the Economic Museum at the Exhibition Building. The danger of this new undertaking is that it should overlap on the one hand the National, and, on the other, the Technological Museums. To a certain extent this has already been the case. Conchological and paleontological collections should certainly find no place there, that is if our museums are to be helps to study and not mere show places. To be valuable, collections should be complete. The authorities of our various institutions should work together in harmony and with common purpose. Public money should certainly not be spent in gathering a few specimens at the Exhibition Building of shells, or fossils, or the like, and even presentations of such should be handed in to the National Museum. A student cannot afford time, if he needs to compare specimen with specimen, to run between the Exhibition and University Buildings. But an Economic Museum in itself is another and much needed help, not only to the scientist, but to those who are called the practical men of the community—manufacturers, agriculturists, horticulturists, all need such an aid. Specimens of products, with their economic uses; complete sets of insects noxious to plants, such as have been prepared and placed there by our fellow-member, Mr. French; the admirable series of woods by Baron von Mueller; complete sets of fungi, classified as edible, harmless, poisonous; microscopic fungi hurtful to plants; insectivorous birds, that all grain or fruit growers should cherish and protect; sorts of grains or fruits suitable to the various soils of the colony, with specimens of such soils. These are but illustrations of what an Economical Museum should be; the only difficulty seems to be the drawing a line between the Technological and the Economic Museums, and I think we ought to deprecate the establishment of mere rival collections. We have not scientists enough to spare men in different places to do the same work, and we have neither the wealth of money or time to spend in running from place to place in our pursuit of knowledge. To the botanist the Botanical Museum, under the care of the Baron von Müller, offers all that he needs of the flora of Australia; while our Botanical Garden is not only a thing of beauty, but a live book adorned with nature's own most magnificent paintings, in which those who walk may read and learn.

I have been led thus to take up my time—not intentionally at first—in speaking of the helps we enjoy in this city for the domestication of science. Our one hundred and sixty members show that in this young land minds are not shut to the wonders that nature is ever ready to reveal to those who are willing to open

their eyes and see. But with the aid we have—with a land full of unique forms—with many a life history yet unwritten, the worshippers at Nature's altar should be increased many fold, and to all and sundry who wish to do honest work in a humble and patient way our Club holds out a hand of heartiest welcome.

Before I close my address I should note one or two matters of public interest that have engaged the attention of the Club. In October last a deputation waited on the Minister of Lands with reference to the destruction of trees and shrubs in Studley Park. The result has been that increased vigilance has been given to the preservation of the park in its natural beauty. The Club also presented a petition to Parliament supporting the amended Game Act which has abolished swivel and punt guns, by which such wasteful destruction of bird life has been caused for years past on our lakes and swamps. A committee of our Club is also just now busily engaged in preparing a list of insectivorous, game and other birds that, in their opinion, should be brought under the provisions of the Game Act.

As loyal Australians we cannot but be glad that our land is receiving attention from naturalists in the old countries. The miserable description of its fauna and flora given by the elder Darwin, doubtless, as Mr. Lucas pointed out to us at one of our meetings, prevented much attention being paid to our natural history. The advent of Mr. Caldwell, and his patient investigation into the vexed question of the reproduction of the Monotremata and *Ceratodus*, is a matter for congratulation. Biologists will be eager to learn all he has to tell us. We are glad, also, to welcome to this colony so well known a labourer as Mr. M'Alpin, the newly-appointed lecturer at Ormond College. Congratulating the college on having obtained the services of so distinguished a man, and of one who can make science popular, and is able to lecture on scientific subjects without the continual use of sesquipedal words.

Ladies and gentlemen, while we congratulate ourselves on what has been done, let us ever understand what the true end of science is. It certainly is not the mere gratification of fancies—the passing amusement of an hour. It is not simply to know. Lord Bacon's famous motto was one we might almost take as the motto of our Club—"The true end of science is to enrich human life with useful arts and inventions." And truly, by the patient study of life in all its forms, adding to the sum of human knowledge, we may add to the sum of human happiness. I affirm that that man who helps to make the world cleaner and healthier, or who is able by patient investigation to add to the store of its common wealth, is truly an apostle of that divine kingdom that prophets and seers have forecast and sung of.

In concluding my address, do not suppose that I think for one moment that our young men are ever to be looking through lenses, or that our young women are to do naught but classify flowers or animals. Nor do I suppose or wish that all evening parties should be turned into scientific conversaziones, that lectures should take the place of songs, and dances all give way to dissections. I only plead for an intelligent acquaintance with the phenomena of nature, and some knowledge of the laws by which such phenomena are governed; that the conversation of intelligent people should sometimes rise above the idiotic meanderings of dreary commonplaces, and that blatant ignorance should not assume to be the philosophy of the day. Ladies and gentlemen of our Club, you are doing your part in no unimportant work. You are helping to bring in a time of knowledge that shall alike be useful and reverent. Our land is full of wealth. Rich mines of truth need patient investigation to compel them to yield up their stores—hidden treasures are for these who can learn the password. Let us learn to know that we may know to act.

OUTLINE OF LECTURETTE BY REV. A. W. CRESSWELL, ON SOME
OF THE LARGER EXTINCT ANIMALS OF AUSTRALASIA.

After a few introductory remarks, the lecturer drew attention to the well-known laws connected with the geographical distribution of animals, according to which every large continental division of the earth has a certain class of existing animals which are more or less peculiar to or characteristic of it, and also the fossil remains of the animals found in the most recent Tertiary deposits of every such "Zoological Province" indicate a pre-existent group of animals of the same types as are now living there, only for the most part on a very gigantic scale. After giving some illustrations of these laws by comparing the Recent with the Pleistocene fauna in the Natural History provinces of Europe, Southern Asia, and South America, the lecturer then proceeded to show that the two provinces of Australia and New Zealand offered no exception. Australia and the adjacent islands formed the great abode of the marsupials, and so also the extinct quadrupeds whose fossil remains were found in the most recent Tertiary formations of Australia were of the same marsupial type, only they were of the most gigantic size, *e.g.*, the *Macropus* (*Titan* and *Atlas*), and *Procoptodon* (*Goliath*), were the giant prototypes of the kangaroos, only three times as large as the largest "old man." *Diprotodons* (*Australis* and *longiceps*) were the ancient representatives of our little native bear, but were as large as a rhinoceros, and being, of course, unable to climb up trees, used to pull them down, like the *Megatherium*, or giant sloth of South America, and the *Thylacoleos* (*Oweni* and *carnifex*), or great

marsupial Lions, were the forerunners of the native cats, &c., but were as large as an ordinary lion. They had some interesting peculiarities of dentition, which the lecturer described.

Again, New Zealand was the only present abode of wingless birds of the genus *Apteryx*, or "Ki Wi" of the natives, and that had its great precursor in the *Deinornis (giganteus, Elephantopus)*, or "Moa" of the natives, a bird ranging up to twelve feet high, whose fossil remains are found in the most recent geological deposits of the island, but they had also been found fossil in Queensland.

After referring to some triumphs of Palæontological skill by which some of these creatures had been restored in the first instance from a single tooth or other fragment, and then discovered in more complete form afterwards, so as exactly to "justify the wisdom" of the Palæontologist, the lecturer referred to the "law of correlation of form," and went on to explain from it, how "a single fragment of bone in the hands of a Cuvier, an Owen, or a McCoy, would afford a clue by which any one of these learned savants would be able not only to reconstruct the entire skeleton of the animal to which it belonged, but to predicate its food, its habits, and in a word, its whole natural history." The conclusion of the lecturette consisted of a quotation of Prof. Owen's testimony in favor of the Theistic position as against materialism, as the result of his study of Palæontology.

The lecturette was illustrated by diagrams, and by skulls of recent animals.

The second lecturette, "Insects, their forms and Metamorphoses," was delivered by Mr. F. G. A. Barnard, the hon. secretary, and proved both interesting and instructive. The lecturer, in as simple words as possible, showed the position of the class *Insecta* in the animal kingdom, and its relationship to the other classes of the same sub-kingdom, *Annulosa*. He then gave a brief account of the metamorphosis, or change of form, in the three more or less complete stages through which every insect passes between its birth and its fullest development. The seven principal orders of insects were then rapidly glanced at, and their leading differences explained. References were made to common insects, of the various types, likely to be familiar to most persons, and to a series of drawings made by the lecturer; who, in conclusion, expressed his willingness to afford any information possible respecting the insects in his exhibit in the lower room, as also the *larva* and *pupa* cases of the moths and butterflies shown.

Baron von Mueller, in moving a vote of thanks to the president and lecturers, said, that as one of the earliest naturalists in the colony, it gave him great pleasure to witness the advance and prosperity of the Field Club. A quarter of a century ago, from the chair now occupied by the president, he had prophesied the growth

and increased popularity of the study of the Natural Sciences in the colony. He congratulated the president on the use of the happy phrase of the "domestication of science." He was glad to welcome divines like Mr. Halley and Mr. Cresswell amongst the students of science. For the more he and others worked amongst the wonders of Nature, the more impelled they were to recognise a First Great Cause. Mr. A. H. S. Lucas having briefly seconded the resolution, it was carried by acclamation.

The following is a list of the principal exhibitors, and their specimens :—

Mr. D. Best, ten cabinet drawers, containing a fine representative collection of Australian Coleoptera ; and a case of Victorian bird skins.

Mr. F. G. A. Barnard, in illustration of his lecturette, three cases of insects collected in the vicinity of Kew, containing representatives of all the principal orders, sections, families, and genera ; a plan with specimens attached showing the relationship between the different classes of the sub-kingdom *Annulosa* ; and also living larva of the Emperor Moth (*Antheræa Eucalypti*), and the pupa cases of several butterflies and moths. Several well-grown Victorian ferns, amongst them being *Gleichenia flabellata*, *G. circinata*, *Pteris umbrosa*, and *Schizæa dichotoma*.

Mr. A. J. Campbell, a small case of the nests and eggs of Australian birds ; also the apparatus used for blowing birds' eggs.

Miss F. M. Campbell, a collection of fresh fungi.

Mr. G. Coghill, several pots of Victorian orchids in bloom including *Pterostylis reflexa*, *P. aphylla*, *Eriochilus fimbriatus*, &c.

Mr. J. C. Cole, a fine specimen of a fungus growing from the head of the larva of a moth.

Mr. J. E. Dixon, four cases of Victorian fossils, from the Pliocene, Miocene, Eocene, and Silurian formations.

Mr. C. French, a case of Exotic lepidoptera, including the Atlas Moth of China, and other rare species ; collection of Goliath beetles from West Africa ; a fine pair of living Fijian parrots ; also the gold medal and diploma awarded to him for his entomological collection at Amsterdam.

Master C. French, four cases of Victorian and other fossils, &c. ; native weapons and utensils from Fiji, New Guinea, and West Australia.

Master G. French, a unique case of Australian and other seeds.

Mr. J. H. Gatliff, five cases of marine shells, comprising 210 species of the genera *Conus*, *Murex*, *Voluta*, *Cymba*, and *Melo*.

Master W. H. F. Hill, two cases of Victorian lepidoptera, result of first and second years' collecting.

Master G. E. F. Hill, two cases of Victorian lepidoptera, result of first and second years' collecting.

Mr. E. E. Johnson, a pelican, and other Victorian birds, cat bird, from Richmond River, red and white coral from Fiji, &c.

Mr. H. Kennon, case containing Victorian and South Sea Island shells, coral, weapons, &c.

Mr. W. Kershaw, two cases Exotic lepidoptera, and two cases of Australian timber-feeding moths.

Mr. T. A. Forbes-Leith, case containing collection of sixty-five Australian parrots; cases containing native cat and kittens; White Goshawks, (male from Gippsland, female from Tasmania); case with opossum mice.

Mr. D. LeSouëf, two live tiger snakes, (venomous), and one live carpet snake, (non-venomous), Victoria; one live diamond snake, (non-venomous), New South Wales; four live Victorian lizards, (blue-tongued, and stump-tailed), and the rare tuatara lizard, (live), from New Zealand; collection of snakes, (in spirits), from Malay Peninsula; a king penguin from Macquarie Island; a cuscus from New Guinea, a small falcon from Malay States, and *Strix scops*, the smallest of the owls from S. Europe, &c.

Mr. A. H. S. Lucas, collection of Victorian sponges.

Dr. Lucas, several rare Victorian moths.

Baron F. von Mueller, wax model of Murray River Lily, (*Crinum flaccidum*), prepared by Mrs Timbrell: specimens in paper of (1), *Rhododendron Toverenæ*, a new species with very large white flower bunches, discovered in New Guinea by Mr. Hunstein, (with wood-cut); (2), *Bikkia Bridgeana*, a splendid new species brought from New Guinea by Captain Bridge, R.N.; (3), *Dipteranthemum Crosslandi*, a charming new everlasting, gathered in West Australia by Mr. Crossland, the flower resembling some dipterous insects; (4), other new plants described in the "Victorian Naturalist;" Edible fruits from New Guinea, viz., *Bassia Erskineana*, *B. MacLAYana*, *B. coco*, *Pangium edule*, obtained by Mr. Mikluko-Macklay, and Rev. W. Gill; leaves and acorns of New Guinea Oaks, viz., *Quercus Dalbertisii* and *Q. Gulliveri*; large Mexican acorns of *Q. Skinneri*; also bound copy of "Eucalyptographia," and plates of forthcoming "Monograph of the Myoporinæ."

Mr. F. Reader, two books of minute Victorian flowering plants, collection of Victorian lichens, including two new species, *Lecanora leucaspida*, Knight, and *Pertusaria albescens*, Knight.

Mr. G. Rose, a case of fossils and minerals.

Mr. A. Thie, a large collection of Fijian and other implements, weapons, manufactures, &c.

Mr. T. Worcester, two cases of land shells, containing many rare species.

About half-past ten the visitors began to disperse, after having spent a very enjoyable and instructive evening.

EXCHANGE.

F. R. would be glad to exchange New Zealand shells, (two glass cases), and many duplicates, named sponges, &c., and Victorian insects and shells, for Australian plants, or books relating to A. botany.

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# Victorian Naturalist:

THE JOURNAL AND MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

The Author of each article is responsible for the facts and opinions he records.

## CONTENTS:

|                                                                                               | PAGE |
|-----------------------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                                    | 17   |
| Succinct Notes on some Plants from New Guinea. By<br>BARON FERD. VON MUELLER, K.C.M.G. ... .. | 18   |
| Charles Darwin on Australia. By A. H. S. LUCAS, M.A.                                          | 20   |
| The Phanerogamous Plants of Studley Park, Kew, near<br>Melbourne. By F. READER. ... ..        | 24   |
| Notes. ... ..                                                                                 | 28   |

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# Field Naturalists' Club of Victoria.

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

No Entrance Fee. Annual Subscription, including copy of proceedings 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Eight shillings (post free).

THE

# Victorian Naturalist:

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JUNE 1885.

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## THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE fifth annual meeting of this Club was held at the Royal Society's Hall, on Monday evening, 11th May, 1885.

The president, the Rev. J. J. Halley, occupied the chair, and about seventy members and visitors were present.

Letters were read from Mr. Joseph Mack, Lismore; Mr. Jno. Box, Malvern; and Mr. M. Herdman, Experimental Farm, Cashel; in favor of the Club's suggestions *re* Native Birds.

The hon. librarian reported the receipt of the following additions to the library:—"Prodromus of Zoology of Victoria," Decade X; "Bulletin of the Imperial Society of Naturalists, Moscow," 1884; "Annual Report, Ballarat School of Mines," 1884; "Annual Report, Bendigo School of Mines," 1884; "Southern Science Record," No. 4.

The hon. sec. reported that the monthly excursion held on the previous Saturday at Red Bluff was well attended, considering the threatening state of the weather, the most interesting item noted was the occurrence of the orchid *Pterostylis vittata* in bloom.

The following were elected members of the Club—Miss Smith, Messrs Jno. Curtayne, H. W. Hunt, D. McAlpine, E. Nicolson, J. E. Sherrard, J. Sims, Wm. Strachan, Alex. Wilson, Jno. Wilson, Alfd. Wyatt, and Masters W. H. and G. E. Hill.

Mr. F. R. Godfrey promised a paper on "Surface Shells" for a future meeting.

Mr. D. Best, in accordance with notice, moved that the number of members of Committee be increased to seven, seconded by Mr. A. H. S. Lucas, and carried.

The hon. secretary read the annual report and balance sheet, which showed the Club to be in a flourishing condition. Amongst other suggestions made, was that of holding a wild flower show during the coming spring, which found much favor among those present.

The following office-bearers were elected without opposition:—President, Rev. J. J. Halley, Vice-Presidents, Mr. T. A. Forbes-Leith and Mr. A. H. S. Lucas, M.A.; Hon. Treasurer, Mr. E. Bage; Hon. Librarian, Mr. C. French; Hon. Secretary, Mr. F. G. A. Barnard; and Assistant Hon. Secretary, Mr. G. Coghill.

The ballot for members of Committee resulted as follows—Mrs. Dobson, Mrs. J. Simson, Messrs D. Best, J. H. Gatliff, G. R. Hill, D. LeSouëf, and C. A. Topp, M.A.

A vote of thanks to the retiring office-bearers was carried unanimously.

Mr. C. A. Topp mentioned that two mosses recently found by Mr. Tisdall, of Walhalla, had proved to be new to science, and had been named after the finder and the locality respectively.

The following were the principal exhibits:—By Mr. D. Best, a box of Fijian insects; by Mr. G. Coghill, orchids in bloom, *Pterostylis vittata*, and *P. præcox*; by Mr. P. Dattari, orchids in bloom, *P. nana* and *P. scabrída*, from Brighton, also Mexican ferns, *Cheilanthes farinosa* and *Pteris nemoralis*; by Mr. E. A. Dombrain, nests of weaver-bird, from Elephanta Island, also two snake-skins; by Mr. C. French, exotic Coleoptera, section *Cetonidæ*; by Master C. French, land shells; by Master R. Hall, Victorian birds' eggs, and South Australian insects; by Masters W. H. and G. E. Hill, each a case of moths collected since last meeting; by Mr. T. Hyland, eggs collected around Colac last season; by Mr. H. Kennon, Nautilus Shells from Brighton, said by Professor McCoy to be the most perfect specimens yet found; by Mr. T. A. Forbes-Leith, podargus, *P. strigoides*, from N. W. Victoria, also from Yan Yean, boo-book owl, *Strix ninox*, from Werribee, and banded stilt, *Cladorynchus pectoralis*, from Murray River; by Mr. A. H. S. Lucas, silver-fish, having abnormal caudal fin, with bifid inferior lobe; by Mr. H. W. Milligan, three squirrels, and twenty species of birds from Lillydale; by Mr. F. Reader, plants from Studley Park, *Asperifoleæ-Epacrideæ*; by Mr. J. F. Roberts, new exotic orchid, *Phalænopsis Robertsiana*.

After the usual *conversazione* the meeting terminated.

## SUCCINCT NOTES ON SOME PLANTS FROM NEW GUINEA.

By BARON FERD. VON MUELLER, K.C.M.G., M.D., Ph.D., F.R.S

(Continued.)

*Cycas Scratchleyana*.—Leaves glabrous; their segments chartaceous, flat, rather broad, shining on both sides, hardly or not paler

beneath, slightly decurrent at the gradually narrowed base; antheriferous scales rather large, almost chartaceous, broadly cuneate, glabrous above, tomentose beneath, truncate or but slightly convex in front, without any acumen, not even distinctly apiculated, the antheriferous area extending nearly to the summit, the narrow space above it more tomentose and sometimes thickened there towards the middle.

On Mount Bedford, Jala-River, Dedouri-Country; W. Armit.

This species of fern-pine, though well marked, can in its characteristics here only as yet be defined very partially, mere fragments of leaves and some detached staminate scales only being available for examination. In leaflets it comes much nearer to *C. circinalis* and *C. Rumphii*, than to *C. media* and *C. Papuana*; the leaflets attain about half an inch in width, and are less rigid than those of most other congeners. The male scales are  $1\frac{1}{2}$ -2 inches long, and near the summit about one inch broad; all the specimens gathered of these scales are destitute of any pungent prolongation, the usual acumen being perhaps replaced by the short repressed but not free turgescence underneath. This characteristic of the androphyls is quite unique in the genus.

It is with particular pleasure, that I dedicate this new form of a very stately class of plants to the distinguished first ruler of British New Guinea, his Excellency General Scratchley.

Mr. Armit's sendings contain also the following plants as hitherto unrecorded from New Guinea:—

*Pittosporum ferrugineum*; Astrolabe-Range.

*Erythrina Indica*; base of Astrolabe-Range.

*Pholidota imbricata*; on *Cycas*-stems, Mount Astrolabe.

*Habenaria* sp.; Astrolabe-Range.

*Iphigenia Indica*; Astrolabe-Range.

*Panicum plicatum*; Laloki-River.

*Panicum semialatum*; Astrolabe-Range.

*Panicum brevifolium*; Mt. Bedford.

*Lygodium scandens*; Jala-River.

*Trichomanes Javanicum*; Mount Bedford, up to 3600 feet.

*Trichomanes pallidum*; Lochivaga, Jala-River.

*Cyathea* sp. and *Alsophila* 2 sp.; Jala-River; these or allied species of fern-trees have with some others been also found by Mr. Edelfelt on Astrolabe-Range.

*Taenitis blechnoides*; Mount Bedford up to 3600 feet; with the normal state also a diminutive form in fruit.

*Lindsaya concinna*; Mount Bedford.

*Polypodium adnascens*; Laloke.

*Hypolepis* sp.; Jala-River.

*Acrostichum spicatum*; Mount Bedford, 3600 ft.

Also a tall moss, resembling *Dawsonia superba*, but without fruit.

The highly experienced Pteridographer, J. G. Baker, records in Britten's "Journal of Botany for 1885," p. 19, *Selaginella Wallichii* from New Guinea, and at p. 46 *Selaginella latifolia*.

Strange, as it may appear, Mr. Armit brought already *Manihot utilissima* from remote places of New Guinea, where hardly any previous intercourse with Europeans took place.

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## CHARLES DARWIN ON AUSTRALIA.

By A. H. S. Lucas, M.A.

*Read before the Field Club, 5th March, 1885.*

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IN that perhaps most interesting volume of travels ever written, Darwin's "Naturalist's Voyage Round the World," there is a chapter on Australia. In 1836, Darwin visited Port Jackson, Hobart Town and King George's Sound, spending 18, 10, and 8 days in their neighbourhoods respectively. The great naturalist had thus opportunities of studying nature in New South Wales, in Tasmania, and in Western Australia. To Australian naturalists the impressions of the great thinker must be interesting; and I have thought that a critical study of this chapter may be not without value.

Briefly then, Darwin may be said to have been terribly bored from the time when this land first rose before his eyes till it faded from their vision. The entrance to Port Jackson disappointed him. "Instead of beholding a verdant country interspersed with fine houses, a straight line of yellowish cliff brought to our minds the coast of Patagonia." Even inside the harbour he notices "the thin scrubby trees, bespeaking the curse of sterility." "Proceeding further inland," *i.e.*, to the inmost shrine of Sydney Harbour, now looked upon as a very Bay of Naples, he coldly, says, "the country improves." At Sydney itself his first feelings are those of intense admiration, of self-congratulation that he is an Englishman, but, "upon seeing more of the town afterwards, perhaps my admiration fell a little." It struck him, though Melbourne men may not agree with the observation, that the streets of Sydney "are regular, broad, clean, and kept in excellent order."

After three days in Sydney, Darwin started for Bathurst. Speaking of the woodland as it appeared in January, he says freely, "I cannot imagine a more complete contrast, in every respect, than between the forests of Valdivia or Chiloe, and the woods of Australia." This is a magnificent generalisation, it must be admitted, after a day's ride through the open timber of the lowlands of New South Wales. To those who are now familiar with the tropical forests of Queensland and the grand high woods of our ranges, it may seem



to be based on too slender a foundation. With quick eye he gathers together the general features of the vegetation, the vertically-placed leaves with consequent absence of shade and presence of grass, and the "desolate and untidy appearance of some Eucalypts with bark hanging in long shreds and swinging about in the wind." He then enters upon an argument on the relative beauty of evergreen and deciduous foliage. He considers that the appetite for the exquisite greenery of the Northern Spring compensates for having to gaze on "the land covered for so many months with mere naked skeletons of trees." The inhabitant of the Tropics gazes with sated eyes on uninterrupted gorgeousness. The rest of the argument is suppressed, but it would seem to have been an *a fortiori*. If the people in the Tropics are worse off than the English, how much more the people in this gum-clad Australia. Darwin could have known nothing personally of the outburst of beauty we too enjoy in Spring.

In this up-country journey, Darwin met two parties of aborigines. He naturally comments on their already scant numbers, and discusses the causes of destruction. It is interesting to find him pondering over the mystery of infection in days long before the germ-theory of zymotic diseases had been broached. He comes to the conclusion that "the effluvium of one set of men shut up together for a time may be poisonous when inhaled by others, especially perhaps if of different races." Contact alone, he indicates, may be enough to introduce most virulent disease in the weaker race, while the stronger does not even show symptoms of the disorder. He quotes Dr. Macculloch, who says, "it is asserted that on the arrival of a stranger (at St. Kilda), all the inhabitants in the common phraseology catch a cold." And though Macculloch considers all this as ludicrous, Darwin thinks it impossible that such a belief, (found to exist also at Tahiti and the Chatham Islands), should have become universal without some good foundation. It would be, I think, a novel and a valuable application of our recently acquired knowledge, to consider the many strange results of the mere contact of different races in the past, in the light of the modern theories of germ-dispersion.

Darwin is as hard on the scenery as on the capital of the sister colony. He says, "from so grand a title as Blue Mountains, and from their absolute altitude, I expected to have seen a bold chain of mountains crossing the country, but instead of this, a sloping plain presents merely an inconsiderable front to the lowland near the coast." And "once on the sandstone platform, the scenery becomes exceedingly monotonous."

He is, however, able to find food for speculation in the great cliff-bordered valleys, almost as famous a geological puzzle as the parallel roads of Glenroy. Darwin assigns to them after much deliberation a marine origin. In fact, a Port Phillip—though of

course he had not seen this—is a Weatherboard or Govett's Leap, a valley in process of formation: the waves of the inland harbour are wearing vertical cliffs as at Cheltenham say, and the currents carry out *débris* through the narrow heads. How far this is the view held by Sydney geologists I cannot say; but the modern tendency is rather to call in the aid of subaerial denudation in the explanation of contour phenomena. Thus the Chalk and Limestone escarpments in England and France have long ceased to be considered as old lines of cliff. And the cirques of Norway and the Alps, great amphitheatrical valleys, apparently very similar to those of New South Wales, are respectively attributed by Amand Hellund and Prof. Bonney, to the action of glaciers and the action of multitudinous waterfalls. As traces of glacial action have been detected by Mr. Stirling in the Australian Alps, we may be on the look-out for evidences of more extensive erosion in the past.

Darwin spent a short time at a station manned by some forty convicts, and comments on the awful convict atmosphere. He went for a day's shooting, but had poor sport; no kangaroo, no wild-dog even, no emu; but the party secured a kangaroo rat by the aid of the dogs, "an animal," as he says, "as large as a rabbit, but with the figure of a kangaroo." He did not see many birds, only "some large flocks of white cockatoos feeding in a cornfield," and a few most beautiful parrots, crows and magpies. In the evening he saw several Platypuses "along a chain of ponds, which in this dry country represented the course of a river."

On the ride to Bathurst, he experienced "the sirocco-like wind of Australia, which comes from the parched deserts of the interior." This untoward experience may perhaps account for the caustic reflection which presently follows. "I was told at Sydney not to form too bad an opinion of Australia by judging of the country from the roadside, nor too good a one from Bathurst; in this latter respect I did not feel myself in the least danger of being prejudiced."

Darwin's views on the then state of society in New South Wales, the condition of the convicts, and the attractions the country possessed for emigrants, are hardly matter for discussion here, though they are extremely interesting and fully as flattering as his observations on the country itself.

On landing at Hobart, on 5th February, Darwin is as little pleased with the favourite summer resort of Australians of to-day as he is with the monotony of the Mainland. Those who during the recent vacation, Premier or Pimate or private individual, have found health and enjoyment amid the glorious scenery of the Lower Derwent, will be disappointed in the great Naturalist's estimate of its beauties. He begins, "Mount Wellington is a mountain 3100 feet high, but of little picturesque beauty." I need hardly say that the mountain is nowadays readily accessible, and the climb an easy

one, when you drive half-way up, and find a carriage waiting for you when you have come half-way back again. But it was a severe excursion in Darwin's time. He failed indeed in his first attempt, and only succeeded after much hard work in his second, for "the guide, a stupid fellow, conducted us to the southern and damp side of the mountain." The ascent on this side would be a big climb even to-day. He says nothing of the brilliant flowers or of the brightly-colored berries which at this time of year so abound on Mount Wellington. He has no word for the Organ-Pipes or the Ploughed Fields, really magnificent examples of Basaltic bedding and Basaltic weathering. At the very summit, he says again, the elevation is 3100 feet above sea level, whereas it reaches rather more than another thousand feet, *i.e.*, is about as high and as prominent as Vesuvius. He is indeed constrained to admit that "in many parts the Eucalypti composed a noble forest." But the fronds of the tree-ferns, though elegant, "produced a gloomy shade."

In noticing the Sandy Point travertine with fossil leaf impressions and land-shells, he makes a generalisation which, as uncalled for and refuted by facts since collected, calls for remark. He says, "It is not improbable that this one small quarry includes the only remaining record of the vegetation of Van Diemen's Land during some former epoch." Tasmania was notoriously unexplored—nay is so at the present time to an extent one does not realize till one tries to work away from the alienated lands. However, already tertiary plant beds of similar age have been discovered by Mr. R. M. Johnston, at three places in the Tamar Basin, N. Esk, Stevenson's Bend and Breadalbane, and probably also by Mr. Charles Gould, at Macquarie Harbour.

The last point of our continent Darwin touched at was King George's Sound; "we stayed there eight days," he writes, "and did not during our voyage pass a more dull and uninteresting time." Not even the corroboree of the White Cockatoo tribe could remove the ennui. He scoffs at the grass trees, which are surely to a naturalist most curious varieties of the lily type, and which do not in any way affect to rival the palms with which they are of course ignominiously compared. Singularly enough, an old pupil of mine, also a young student from Christ's College with a Cambridge training in natural science, who on coming out made a stay at Albany, was much struck by the abundance of marine forms, sponges, &c., strewn upon the coast.

The chapter closes with this formal adieu, "Farewell, Australia! you are a rising child, and doubtless some day will reign a great princess in the South; but you are too great and too ambitious for affection, yet not great enough for respect. I leave your shores without sorrow or regret."

To Australian naturalists all this must be extremely disappointing.

Our fauna and flora are unique. They are probably the oldest in the world, and so furnish multitudes of facts most important in their bearing on all theories of evolution. In mere numbers the forms of life are imposing. Yet there is no enthusiasm in Darwin, on the contrary, only regret that he had spent so much time so drearily.

It may be that Darwin was worn out by the hardships of the voyage when he reached Australia. It is well-known that the chronic suffering he endured so patiently in the course of his devoted life was probably attributable to his exertions and exposures during the long five years on the "Beagle." At all events, he seems to have found as much to charm him in the Cape Verde Islands or Patagonia, or almost the little cluster of the St. Paul's rocks, as in the whole of Australia.

Whatever was the cause of the spleen, Australian natural history has suffered—been hindered in its development probably for several years—by the publication of this chapter by the great authority. Had Darwin pointed out, on the contrary, what a field was here for observation and for work, we can only conjecture how much more rapid might have been the progress of Australian biology.

We are somewhat sensitive to the accounts which travellers publish of our colonies. And it is to me, and I think will be to you, a sad reflection that perhaps the most repellent description of this strange southern land should have been penned by Charles Darwin, the most eminent naturalist of the century.

## THE PHANEROGAMOUS PLANTS OF STUDLEY PARK, KEW, NEAR MELBOURNE.

BY F. READER.

*Read before the Field Naturalists' Club of Victoria, Jan. 12, 1885.*

### (PART II.)

#### *Order. Elatineæ Cambessèdes.*

Properties.—Unknown.

*Elatine*, L. *Etym.* Alluding to some fancied resemblance of the foliage with that of the Silver-fir, which latter is mentioned as *Elate* in the "Odyssee." V. N. Water-Wort.

*E. Americana*, Arnott. American Water-Wort. Flowers Nov., December. Distributed Tasmania, N. Zealand, India, South and North America.

#### *Order Hypericinæ, I. de St. Hilaira.*

Properties.—Drastic purgative, astringent and aromatic tonics. Resinous. The leaves are mostly marked with pellucid dots.

*Hypericum*, Tournef. *Etym.* From the greek *υπερικον*, (hypericon), of Dioscorides. V. N. St. John's-Wort.

*H. Japnicum*, Thunberg. Flowers Sept. to April. Distributed Tasmania, New Zealand, New Caledonia, and the hilly country of India.

*Order, Linææ, D.C.*

Properties.—Mucilaginous, oily and diuretic. The Seeds are occasionally purgative. The stem contains the fibre, which constitute flax

*Linum*, Tournefort. *Etym.* From the root lin, a thread, the parent of many words in Latin, English and French.

*L. marginale*, All Cunningham. Native Flax. Flowers Sept. to May. Distributed Tasmania. Introduced in New Zealand.

*Order, Geraniaceæ, A. L. de Jussien.*

Properties.—Often astringent, aromatic, and abound in volatile oil. Oxalis abounds in oxalic acid, others have eatable tubers. The root of *Geranium maculatum* is powerfully astringent. It contains Tannin. *G. Robertianum* is a remedy in nephritic complaints.

The so-called garden Geraniums are *Pelargonix*, having zygomorphic flowers, a spurred sepal, perigynous petals, no glands, and few declinate stamens.

*Pelargonium*, L'Héritier. *Etym.* From the shape of the fruit resembling a stork's bill.

*P. australe*, Willdenow. Wild Geranium. Flowers October to February. Distributed Tasmania, New Zealand, South Africa, and Tristan d'Acunha.

Uses.—A lotion of bruised leaves of this plant is useful for burns and scalds.

*P. Rodneyanum*, Mitchell. Apparently but a large flowered variety of the preceding. Distributed. Confined to Australia.

*Erodium*, L'Héritier. *Etym.* From the greek ἐρώδιος (erodios), a heron, the fruit resembling somewhat the beak of that bird. Vern. name, Stork's Bill.

*E. cicutarium*, L'Héritier. Flowers nearly all the year round. Naturalized. Distributed Europe, North Africa, Siberia, West Asia to North West India.

*Geranium*, Tournefort. *Etym.* In allusion to the fruit, bearing a slight resemblance to a crane's bill. Vern. name, Crane's Bill.

*G. dissectum*, L. Flowers nearly all the year round. Almost universally distributed. The species is subject to great variation.

*Oxalis*, L. *Etym.* From ὄξυς (oxus), sharp, acid, Vern. name, Wood Sorrel.

Uses.—The genus *Oxalis* contains binoxalate of potash, prepared by the evaporation of the juice. The salt is the *Sal acetosella* of

Pharmacists, a capital chemical for removing ink stains. On the continent it is made use of as a refrigerant, in very small doses, and is reputed to be effective in some inflammatory conditions of mucous membranes.

*O. corniculata*, L. Flowers all the year round. Distributed, Cosmopolite, except in very cold regions. It is considered to have taken its origin in America. Like the preceding species, very variable.

Uses.—May be advantageously employed as a refrigerant, diuretic and deobstruent.

*O. grandiflora*, Jacquin. Flowers May to September. Native of the Cape of Good Hope. Probably escaped from the gardens and a pretty addition to our indigenous Flora.

Order *Malvaceæ*, Adanson.

Properties.—Mucilaginous, especially the seeds. The stems and roots yield textiles. The Marshmallow, *Althæa officinalis*, L., is taken as a demulcent. It is more extensively used on the continent than in England. *Uëhkra*, *Okro*, *Okra*, *Bendi-Kai*, the fruit of *Hibiscus esculentus*, L., is used in tropical countries as a demulcent, or as an emollient poultice.

*Malva*, L. Etym. From  $\mu\chi\lambda\acute{\alpha}\chi\eta$  (malache), soft, alluding to the emollient properties. Vern. name, Mallow.

*M. rotundifolia*, L. Flowers September to April. An Alien. Distributed Europe, North Africa, Siberia, West Asia to India, introduced in United States.

Uses.—Formerly employed in dysentery, ischuria, nephritis, and strangury. The leaves and also the flowers may be utilized for poultices in abscesses, inflammation, as also for gargles, clysters, &c., combined with other remedies.

*Modiola*, Mænth. Etym. From modiolus, nave of a wheel, in reference to the position of the carpels. Some authors derive the name from the Roman measure, modiolus, referring to the depressed fruit.

*M. multifida*, Mûch. Flowers October to May. Introduced from North America.

*Plagianthus*, R. and P. Forster. Etym. Alluding to the oblique petals.

*P. pulchellus*, A. Gray. Vern. name, Hemp Bush. Flowers September, October. Distributed Tasmania.

Order, *Euphorbiaceæ*, A. L. DeJuss.

Properties.—Acrid, often milky. Too numerous to specify. Cascarella bark a tonic from *Croton Eluteria*, Bennett; Croton Seeds from *Croton Tiglium*, L., yield the Croton Oil, a powerful cathartic and externally a rubefacient; Castor Oil seeds, *Ricinus communis*, L., yield Castor Oil, well-known as a mild and safe purgative. Kamala, the ruby-like glands of the fruit or capsules of *Rottlera*

*tinctoria*, Roxb., administered for the expulsion of Tape-worm, also as an external application in *Herpes circinnatus*. In India it is employed for dyeing silk a rich orange-brown. *Euphorbium*, from *Euphorbia resinifera*, Berg, formerly employed as an emetic and purgative; it is an ingredient of a paint for the preservation of ships' bottoms. *Croton tinctorum* yields Tournsol, a valuable dye, but is highly acrid and drastic. Cassava, or Mandioc, or Tapioca, from the stem of *gatropha Manihot*, a poisonous plant, but is purified by washing and torrefaction. Many are poisonous, as *Manchineel*, *Hyænanche*, *Sapium aucuparium*, &c.

*Poranthera*, Rudge. *Etym.* Alluding to the manner in which the anthers open.

*P. microphylla*, Brongn. Flowers August to December. Distributed Tasmania.

*Euphorbia* L. *Etym.* From Euphorbos, physician to Juba, King of Mauritania, who brought the plant into use. Originally applied to a cactus-like species of North Africa. Vern. name, Spurge.

*E. Peplus* L. Flowers September to January. Distributed Europe, North Africa, Siberia, W. Asia to N. W. India. Introduced in North America.

Uses.—Formerly employed as a purgative.

*Order, Urticaceæ, Ventenat*

Properties.—The inner bark affords a valuable tenacious fibre. In Scotland young tops of nettles are boiled and eaten by the poorer people.

*Urtica Tournef.* *Etym.* From uro, alluding to the burning pain of the stings. The English name, nettle, is the same word as the Anglo-Saxon netel or noedel, a needle, and was similarly applied. Vern. name, nettle. The seeds serve to fatten fowls.

*U. urens*, L. Flowers September to January. Introduced. Distributed. By emigration almost universally represented.

Uses.—The herb may be employed in spitting of blood, Hæmorrhoids, Jaundice. Formerly, paralyzed limbs were lashed with fresh nettles in order to produce through the burning juice a peculiar eruption. The fresh expressed juice may be used as a deobstruent and diuretic. The irritant effect produced is said to be owing to the presence of free formic acid.

*Order, Casuarineæ, Mirbel.*

Properties.—Valuable for their wood. Contains a crystalline substance similar to bicitrate of lime.

*Casuarina*, Rumphius. *Etym.*

*C. quadrivalvis*, Lab., Syn., *C. stricta*, Aiton. She-Oak. Adapted for avenues. Distributed, Tasmania.

*C. distyla*, Ventenat. Stunted She-Oak. Distributed Tasmania

Uses.—Valuable for fixing drift sand.

*C. suberosa*, *Otto & Dietrich*. He-Oak, Swamp or Marsh-Oak. Distributed Tasmania. The flowering time of the casuarineæ requires further observation.

Erratum.—On Page 186 of Vol. I., the heading *Droseraceæ* should precede the paragraph which it follows.

## NOTES.

### NOTE BY T. A. FORBES-LEITH CONCERNING HIS PAPER ON THE PETREL FAMILY.

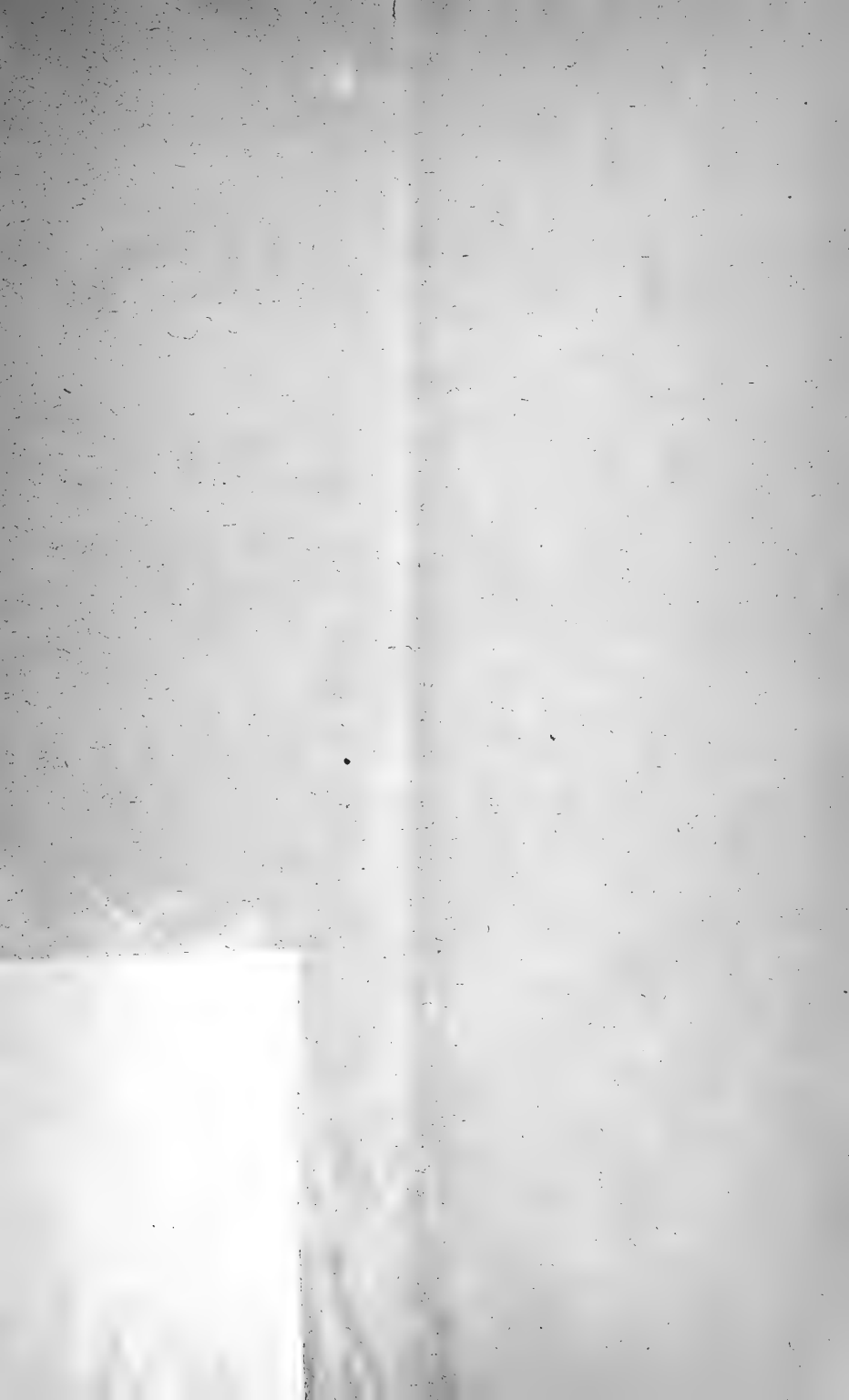
IN the latter part of the paper I read before the Club in March last, on the Petrel family, I mentioned that when rounding Cape Horn in the barque "Surge," we were driven far beyond 60° south, and got in amongst the ice, and that on the 12th of August, 1853, I discovered and shot some specimens of what I believed to be a bird new to science, viz., a snow-white petrel, about the size of a pigeon, with pink eyes, and that I had never seen it since in any museum or private collection. But I omitted to mention that I had once heard of it, nearly 25 years after, when the captain of the ship "George Thompson," gave me a picture of his ship in a most perilous position in icebergs; which happened some years before, when the said ship was driven far to the southward, and hemmed in by gigantic icebergs (some over 500 feet high) for over a week, and all hope of being saved given up. In the foot note it says, "here thousands of pure white petrel were seen."

I believe if the proposed expedition towards the South Pole for scientific research takes place, when the ice is reached my snow-white Petrel will again be seen, and my description of it be found pretty accurate.

### ASTORRHIZA ANGULOSA, (*Brady*.)

THIS is the name of a Foraminifer which was taken in dredging on the east of Azores, at a thousand fathoms, by the "Challenger" expedition; a single specimen was also taken by the "Porcupine" expedition. It has recently been found by Mr. H. Watts, a member of F. N. Club, in miocene deposits at Waurin ponds. It is stated that this is the first time that this foraminifer has been found in a fossil condition.





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THE

Victorian Naturalist:

THE JOURNAL AND MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

The Author of each article is responsible for the facts and opinions he records.

CONTENTS:

	PAGE
Proceedings of the Field Naturalists' Club of Victoria ...	29
Excursion of the Field Naturalists' Club.	31
The Queen's Birthday Excursion to Lilydale.	33
The Phanerogamous Plants of Studley Park, Kew, near Melbourne. By F. READER.	36
Notes.	40

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

No Entrance Fee. Annual Subscription, including copy of proceedings 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

THE

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JULY 1885.

No 19.

THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall, on Wednesday evening, 10th June, 1885.

The president, the Rev. J. J. Halley, occupied the chair, and about eighty members and visitors were present.

Among the visitors was Dr. J. E. Taylor, F.G.S., who was received most cordially, and on being introduced to the meeting by the president, briefly thanked the members for the reception given him, and in the course of a few remarks on the characteristics of the Australian fauna and flora, pointed out the peculiar opportunities Australian naturalists' had for finding "missing links"

Correspondence was read from Mr. I. Batey, Sunbury; Mr. S. S. Crispo, Dromana; and others, mainly in support of the Club's proposal *re* Protection of Native Birds.

The hon. librarian reported the receipt of the following additions to the library:—"Proceedings of the Linnean Society, New South Wales," Volume X. Part I., from the society; "Journal of the New York Microscopical Society" Nos. 2 and 3, from the society; "Midland Naturalist," Vols. 1, 2, 3 and 4, from Mr. W. M. Bale; "Proceedings of Ornithological Society of Vienna," from the society.

The hon. secretary reported that the excursion to Lilydale, on the Queen's Birthday, 25th May, was well attended, about twenty-five members and friends being present. Specimens in several departments were rather scarce, but fungi were most abundant, about 100 species being noted. Several good fossils were also obtained at the lime-stones quarries.

The following were elected members of the Club:—Miss Glenross, Mrs. Gunst, Messrs F. E. Hill, S. Lamble, A. Miller, Chas. Officer, jun., William Officer, J. D. Pinnock, D. Strong, and Robert Watson.

The general business consisted of the consideration of Mr. A. J. Campbell's motion in favor of the protection of native birds. A reply was read from the Zoological Society, which recommended that the bee-eaters, wood-swallows, Banksian and Gang Gang Cockatoos should also be included in the list of protected birds. Dr. Dobson thought the list was too long, and that the club would be more likely to be successful if the number of birds to be protected were curtailed, and on his amendment being carried, the list was again referred to the sub-committee, with a view of getting it shortened.

Papers read—1. Mr. A. H. S. Lucas, M.A., read the second part of the paper by Mr. J. B. Gregory and himself, on "An Overland Trip to Wilson's Promontory," giving an interesting account of the natural history of the granitic or southern portion of the promontory. He stated that the locality is well worthy of a visit by students of geology, and of nearly every branch of biology, and in the course of a few years would doubtless become a favorite spot with tourists. He characterized the promontory as the Cornwall of Victoria.

2. Mr. C. French, F.L.S., contributed the seventh part of his paper on "The Orchids of Victoria," in which he described the following species:—*Microtis porrifolia*, *M. parviflora*, *M. atraea*, *Corysanthes pruinosa*, *Pterostylis cucullata*, *P. furcata*, *P. reflexa*, *P. præcox*, *P. curta*, *P. nutans*; dried specimens of each of which he exhibited. A short discussion ensued in which Dr. Taylor spoke on the irritability of the labellum in the genus *Pterostylis*, as concerned in the fertilisation of the plants by insects. Mr. C. A. Topp, and Mr. F. G. A. Barnard remarked that though they had carefully observed these flowers, they had never yet noticed any insects about them.

Natural history notes—Mr. C. French, F.L.S., contributed a few remarks and exhibited specimens of the larvæ, etc., of a lepidopterous insect, allied to *Tortricina*, which has recently done much damage amongst cabbage and cauliflower plants. Mr. D. McAlpine spoke of the great importance of studying the economic entomology of the colony.

The following were the principal exhibits:—By Mr. E. Bage, colored plates illustrating "Select Flowers and Fruits of Java" by Madame van Nooten; by Mr. F. G. A. Barnard, Victorian coleoptera, living ferns *Gleichenia circinata*, and *Schizæa dichotoma*; by Miss Campbell, fern new to Victoria, *Polypodium phymatodes*, from East Gippsland, eight dried Victorian ferns including *Botrychium ternatum*, *B. lunaria*, *Asplenium nidus*, *A. flaccidum*, *Polypodium phymatodes*, and *P. serpens*, new lichens *Usnea retipora* (Knight) Victoria, and *Parmelia Campbellii*, (Knight) New South Wales, also rough drawings of fungi obtained during Lilydale excursion; by Mr. A. J. Campbell, twenty species of rare Australian bird eggs;

by Mr. G. Coghill, orchids in bloom, *Pterostylis præcox*, *P. nutans* and *P. concinna*; by Mr. A. Coles a very fine *Ornithorhynchus* twenty-three inches long, also Victorian game birds; by Rev. A. W. Cresswell, fossils from Lilydale; by Mr. J. E. Dixon, older pliocene fossils from Cheltenham; by Mr. C. French F.L.S., exotic coleoptera, family *Cetoniidæ*, orchids in illustration of paper, and cabbage moth in various stages; by Master C. French, fossils from Cheltenham; by Mr. J. H. Gatliff, Victorian shells, eighteen species of family *Veneridæ*; viz., *Rupellaria* (3 sp.), *Tapes* (1), *Venus* (6), *Cytherea* (4), *Meroë* (1), and *Dorinia* (2); by Rev. J. J. Halley, specimens of limestone from the Great Pyramid; by Miss Halley, nests of weaver bird, India; by Masters Hill, Victorian lepidoptera; by Mr. H. W. Hunt, Victorian birds' eggs; by Mr. H. Kennon sea-gulls (living) from Warrnambool; by Mr. W. Kershaw, Australian lepidoptera; by Mr. T. A. Forbes-Leith, eighty-four Victorian birds representing thirty families; by Mr. A. H. S. Lucas, M.A., Victorian *Asteridæ*, and plants and shells from Wilson's Promontory in illustration of paper; by Mr. D. McAlpine, frog in first stage of new process of dry preservation; by Mr. F. Reader, plants from Studley Park, (*Coniferae* to *Amaryllidæ*); by Mrs J. Simson, painting on cobweb from Innsprück, and picture in colored sand from Isle of Wight; by Miss Mary Simson, a flying mouse from Langi Kal Kal, Victoria; by Mr. A. Thie, English Ammonites; by Mr. H. Watts, a number of objects under the microscope.

After the usual *conversazione* the meeting terminated.

EXCURSION OF THE FIELD NATURALISTS' CLUB.

THE last excursion prior to the annual meeting of this Club took place on Saturday, May 9th, under the leadership of Mr. C. French, the locality chosen being as stated in the annual report, Brighton, because of its convenience and correspondingly superior resources, which in the short autumnal days and the little time at the disposal of members leaving by the 2 p.m. train, is of great consideration. Briefly then, the members left Melbourne by the 2 p.m. train, and on its arrival at Brighton, it was found that notwithstanding the threatening appearance of the weather, there was a fair attendance, including two lady members of the Club. To save time in walking, a conveyance was in readiness, and drove the party to within a few hundred yards of the Red Bluff Hotel, when a start was made inland. Plants in bloom were but few, although we soon came across a patch of damp, heathy country, in which grew quantities of the plants usually to be found in the district. *Pterostylis aphylla*, and

Eriochilus fimbriatus, were here in considerable numbers, and were secured for the purpose of either cultivation or herbaria. Proceeding onwards towards the hills, we find our old favorite *Styphelia humifusa*, in full bloom, its beautiful crimson tubular-shaped flowers rendering it a general favorite. Several specimens of the *Prasophyllum* found on last trip were also seen, and as this small species may not be either *P. archeri*, or *P. intricatum*, a sharp look-out in the early part of April next, should be kept. As we steer towards the flat or swamp known to old colonists as the Hawk's nest, we pass numerous specimens in flower of *Monotoca scoparia*, and *Epacris impressa*, which by the way reminds us that it was only about two miles from this spot, where was found the first specimen known of the beautiful "double white" variety of this species, and which now is, or was, in the collection of Mr. Scott, of the Royal Nursery, Hawthorn. Birds hereabouts are few, although we were informed that there were quail to be found not far from us, and a few specimens of the Honey-eaters, *Meliphagidæ*, some little Wrens, and a bronze-winged Pigeon, were about the only "land birds" seen. As the afternoon wore on, and we were anxious to do what we could, after collecting a few specimens of the common but very curious lichen, *Cladonia retipora*, which was in fine fruit, and three specimens of *Pterostylis nana*, (the only ones seen during the trip,) we steer a bee-line for the coast, collecting on our way bouquets of wild flowers, as *Epacris*, *Styphelia*, *Banksia*, *Acacia suaveolens*, which together with the curious bronzy-coloured *Restiaceous Hypolana fastigiata*, made a very pretty bunch, in which the *Correas* and *Hibbertias* were prominent. The belt of scrub being reached, a search was made for the early orchids, and very soon was found *Pterostylis vittata*, and *Acianthus exsertus*. The *Jungermannia* were seen, but as it is too early for fruiting specimens, they were passed, or left for a future occasion. To those interested in spiders, it may be mentioned that a very fair collection might be made in the district, and some of these species are very handsome. As it was now getting dusk a start was made for the Red Bluff Hotel, and although barely able to distinguish one plant from another, several pretty mosses and huge *Polypori* were seen, in company with numerous other fungi. A specimen of *Lasiopetalum Baueri*, now somewhat rare about Melbourne, was here found growing just above high water mark, near which were specimens of *Lobelia anceps*, *Salicornia*, *Aster*, and other sea coast plants. On reaching the hotel, the conveyance being in waiting, the railway station was reached in good time, and thus a very pleasant afternoon had been passed. It is to be hoped that during the present year of the Club's existence, these excursions will be better attended as much may be gained thereby physically as well as intellectually. Melbourne was reached at about seven o'clock.

THE QUEEN'S BIRTHDAY EXCURSION. TO LILYDALE.

TAKING advantage of the holiday on Monday, 25th May, a Club excursion was arranged for that day, and after some little discussion at the previous monthly meeting, it was decided to visit Lilydale, as being perhaps the most promising locality at that season of the year. Accordingly at 6.15 a.m., about sixteen members of the Club, including two or three ladies, met at the Prince's Bridge station, and leaving town a few minutes after, in due course arrived at Lilydale. Several more members were picked up at the suburban stations, and at Lilydale three others appeared, who had gone up on the Saturday and Sunday, making altogether a party of about twenty-five. On arrival at Lilydale, it was decided to explore the valley of the Olinda Creek as being the most likely direction to reward the trouble of such early rising. Two parties were now formed, those intent on shooting going on first, the arrangement being made to unite again at a pretty spot on the creek known to the leaders. The rest of the party, consisting principally of botanists and entomologists, after despatching a late breakfast at Lithgow's, started off towards the creek, keeping in a south-easterly direction, and were soon in scrubby country. The entomologists turned over logs and stripped the bark off trees in vain, nothing of any interest being obtained; flowering plants were also very scarce, but fungi were most abundant, and our mycologist had almost as much as she could do in collecting specimens, or packing away those brought to her by other members of the party. On the way several species of ferns were secured by those wanting them, a fine patch of *Gleichenia circinata*, being quite despoiled of its starry fronds for making "bird's nests." The sportsmen were now met, but with almost empty bags. For some unaccountable reason, the valley, usually a good collecting ground, was almost devoid of bird life. The only birds seen during the trip being the frontal shrike-tit (*Falcunculus frontatus*), yellow robin (*Eopsaltria Australis*), Tasmanian honey-eater (*Meliornis Australasiana*), spine-billed honey-eater (*Acanthorhynchus tenuirostris*), gang-gang cockatoo (*Callocephalon galeatum*), and Pennant's parrakeet (*Platycercus Pennantii*.)

A cutting at a bend of the creek was now reached, the damp sides of which were clothed with young seedling ferns of different varieties, in many stages of growth, also several beautiful species of fungi. A short distance a-head the camp fire was seen, and on reaching the spot a halt was made, and the luncheon baskets relieved of some of their good things. One of the members having offered his services as cook, tea was soon manufactured in the orthodox Australian style, and a vegetable beef-steak (*Fistulina*

hepatica) cooked. However this latter proved uneatable, being too old. Near here some splendid specimens of the larger star-fern (*G. flabellata*) were obtained, and a log over the creek was found covered with the delicate little *Hymenophyllum Tunbridgense*. About fifteen other species of ferns were seen during the excursion, but none of them were particularly rare.

After luncheon, the party guided by two members who had been over the same ground on the previous day, rambled towards the ranges, on the way obtaining the only orchid found in bloom, *Pterostylis parviflora*. A little further on the foot-hills were reached. Here the native heath (*Epacris impressa*), principally the pink and crimson varieties, was found in great abundance, and large bunches were gathered for home decoration. A little higher up *Grevillea* sp. was found in flower. The road leads up on to the top of the range affording several pretty views on the way, and crossing one or two fern gullies. At the back of the range many splendid fern gullies exist, which would repay a search at some future time. In one of these visited on the previous day by the members before referred to, several small specimens of the pretty fern *Osmunda barbara* were obtained, and a delicate little blue fungus *Agaricus* (*Leptoma*) sp. A return was now made, a single specimen of *Comesperma ericinum*, being noted in flower. Another short halt was made at the creek, after which a different route to that of the morning was taken over the hills towards Lilydale. On the way several plants of orchids, probably *Pterostylis curta* were seen, also some large fungi, *Agaricus* sp., which were pronounced edible by our mycologist. After a pleasant ramble Lilydale was reached in ample time to allow of a short stoppage for open air tea, before wending our way to the train.

As fungi were the most numerous of the specimens collected, a more detailed list of the species by Miss Campbell may prove interesting.

There were over thirty-five Agarics found, these include many edible kinds as well as the common mushroom, the white lady, and the beautiful *Cantharellus*; gay coloured ones, as the bright red, yellow, and green *Russulas*, the luminous *Panus incandescens*, the dainty little gray Agaric, smelling as sweet and strong as violets, the delicate *Xerotus*, the fast fading *Caprinus*, tiny exquisite blue Agaric (*Leptoma*) of Mr. Tisdall's paper, some whose acrid taste, gave warning of poison, and a large bright violet-coloured Agaric which is edible; the three *Boleti* did not look or smell so tempting as usual. About ten *Polypori*, of these *P. Cinnabarinus* attracting most attention, with its bright red colour; the specimens of *Fistulina hepatica*, the celebrated beef-steak fungus were too old to be eaten; a purple *Trametes*; two *Hydnums* one jelly-like, pale lavender spines, very good eating; three *Storeums*, one for its elegant form and pretty

markings continually picked up; the small bright yellow, jelly-like *Guepinia Spattularia*, was plentiful; many species of *Clavaria* were plentiful, *C. botrytis*, *C. aurea*, etc.; a white jelly-like *Tremella* which can be eaten when fresh; the net puff ball, *Tleodictyon gracile* which is eaten by the New Zealanders; common puff ball, *Lycoperdon gemmatum*; two bright red and a yellow cup-like *Peziza*; *Leotia lubrica* had the most peculiar appearance of any found, bright yellow, semi-transparent stipe, brownish yellow pileus; an uncommon *Hypoxyton*; also very many micro-fungi brought the number up close to a hundred distinct species for the day.

The two members out on the previous day, found a fine patch of the ordinary mushroom, *Agaricus campestris*, one of which was quite six inches in diameter, growing on a roadside.

The geologist of the party, the Rev. A. W. Cresswell, who spent the day at the Cave Hill limestone quarries, furnishes the following account of his experiences:—

Went to the limestone quarries, about half a mile S.E. of Lilydale; being only in search of fossils this time, did not make accurate stratigraphical observations. The quarry, however, is well known to be in a limestone, granular, crystalline, marble formation, about 100 feet thick, interstratified with the upper Silurian rocks, (sandstones, schists, &c.,) of the district. It is not thought to be very persistent or to extend any great distance along its strike (which is nearly meridional as usual with the Silurian,) but is believed to be more or less lenticular and to thin out at no great distance north and south. The prevailing colour is cream-coloured, but some of the strata are of a ferruginous red and others of a bluish grey. The dip is about 45 degrees east, but exact stratigraphical details will be found in the Geological Survey Report for 1855-56. I had never seen any fossils in it before, except a few *Favosites* (Millipore corals) here and there where the surface is weathered, but this last time succeeded in getting the following fossils, viz.:—Several specimens of a sub-genus of *Turbo*, one of them being as large as a good sized recent *Turbo undulatus*. The form appears to me to be close to *Euchelus*, there being no umbilicus or the columella showing trace of being toothed, it is very like our common recent *Euchelus canaliculatus*, but has finer and more numerous liræ. The nearest shell to it in Murchison's "Siluria" appears to be *Cyclonema corallii* of the Upper Ludlow, with which it is perhaps identical. Several specimens of *Murchisonia* apparently corresponding to *M. corallii* of the Upper Ludlow as figured in Murchison's "Siluria." A *Bellerophon*, which I do not know the specific name of, and will have to show to Prof. McCoy for exact identification; and several specimens of the common Upper Silurian species of *Favosites* called *Favosites aspera*, (one of which is sent herewith); a single joint of *Crinoid* stem, probably an *Actinocrinus*. A mammillary stalactite

from the roof of a cavern leading into the quarry was also obtained. It should be mentioned that microscopic sections of this marble show a partly brecciated and partly oolitic structure.

THE PHANEROGAMOUS PLANTS OF STUDLEY PARK, KEW, NEAR MELBOURNE.

By F. READER.

Read before the Field Naturalists' Club of Victoria, Feb. 10, 1885.

(PART III.)

Order, Sapindaceæ, A. L. de Jussien.

Properties.—Various. Root of *Cardiospermum Halicacabum* is aperient, *Sapindus Saponaria* yields a deterative and acrid fruit, containing *Saponin*. The tincture of the berries employed in chlorosis. American *Acer* species yield maple sugar. Guarana, from the seeds of *Paullinia sorbilis*, Mart, the Braz. Cocoa, contains a large amount of Guaranine, an active, bitter principle, said to be identical with Caffeine. Guarana is employed in nervous headache.

Dodonæa, L. Etym. Named in honor of Dodonæus, a celebrated physician and botanist at the time of the emperors, Maximilian II. and Rudolph II.

D. viscosa, L. Syn. D. viscosa, var. vulgaris, Benth. Vern., name, Switch Sorrel. Flowers March. Distributed New Zealand and Tasmania. In New Zealand it is called Akerautangi, ake, and the wood is used for native clubs.

Order, Portulacæ, A. L. de Jussien.

Properties.—Purslane, *Portulaca oleracea* L, and others are employed as esculents.

Claytonia, Gronovius. Etym. In honor of Dr. T. Clayton, a Kentish physician and botanist.

C. calyptrata, F. von Mueller. Flowers September to December. Distributed Tasmania.

Order, Caryophylleæ. Scopoli.

Properties.—Unimportant. *Silene Virginica* is said to have an anthelmintic root. *Saponaria officinalis*, and *Gypsophila Struthium* were formerly used as aperients in skin diseases; they contain *Saponin*. *Lychnis, Githago, Lam.*, the Corn Cockle, now introduced with cereals around Melbourne, also contains *Saponin* in the seeds and *Agrostermmmin*.

Spergularia, Persoon. *Etym.* The diminutive of *Spergula*, from *Spargo*, alluding to the seeds being widely scattered.

S. rubra, Camb. Vern. name, Sand-wort, Spurrey. Flowers September to January. Distributed. Except the Arctic and Tropic zones extends to nearly all countries.

Stellaria, L. *Etym.* from *stella*, indicating the star-shaped spreading of the corolla. Vern. name, Star-wort, Stitch-wort.

S. pungens, Brongn. Flowers September to December. Distributed Tasmania.

S. media, Villars, Chickweed. Flowers nearly all the year round. Distributed, through cultivation dispersed over nearly all temperate and arctic regions. Naturalized.

Uses.—Formerly in repute for Phthisis, dysentery, hæmorrhage and diseases of the skin, &c. Poultry and small birds are fond of the whole plant, especially the seeds.

Cerastium, L. *Etym.* From the Greek κέρας (*keras*), alluding to the curved capsules of some species. Vern. name, Mouse-Ear Chickweed.

C. glomeratum, Thuellier. *Syn.*, *C. vulgatum*, L. Flowers nearly all the year round. An alien. Distributed all temperate and cold regions.

Spergula L. *Etym.* From *spargo*, in allusion to the scattering of its seeds. Vern., name, Spurrey.

S. arvensis, L. Corn or Field Spurrey. Flowers September to March. An alien. Distributed Arctic Europe, North Africa, West Asia, to North West India. Introduced in North America.

Uses.—Cattle are fond of this plant.

Polycarpon, L. *Etym* From the Greek, πόλυσ (*polus*) and καρπος (*karpos*), in allusion to the abundant capsules. Vern. name All seed.

P. tetraphyllum, L. Flowers November to March. Distributed. Almost universally dispersed within the warm and temperate zone.

Silene, L. *Etym.* From the Greek σίalon (*sialon*), saliva alluding to the viscosity of many species.

S. gallica, L. Flowers September to January. An alien. Distributed. Represented in most cultivated regions. There is a variety the *Silene quinquevulnera*, L., with petals entire and spotted with red. Frequently growing with *S. gallica*.

S. pendula, L. Flowers October, November. Probably escaped from the gardens. Native of Sicily.

Order Amarantaceæ, A. L. de Jussien.

Properties.—Unimportant. On account of their often richly coloured flowers mostly cultivated as pot herbs, &c..

Alternanthera, Forskæl. *Etym.* Alluding to the fertile stamens alternating usually with antherless filaments,

A. triandra, Lamarch., Syn., A. sessilis, Br. A. denticulata, A. Cunn. Flowers January to June. Distributed Warmer regions of Asia and America, Africa, Tasmania and New Zealand. Variable.

Order, Salsolaceæ, L.

Properties.—Various. *Chenopodium Quinoa* is widely used as an article of food in Peru. *Ch. anthelminticum* yields Wormseed Oil, an effective vermifuge. Spinach, Beet and others are esculents. *Salsola* and *Salicornia* furnish Carbonate of Soda. From Beet-roots, a fine sugar is extensively manufactured. *Chenopodium olidum* and *baryosmon* act as foetid emmenagogues. *Ch. ambrosioides* is an aromatic expectorant, &c. Many are known as pot herbs.

Rhagodia, R. Br. *Etym.* From rhax, berry, alluding to the numerous berry-like fruits. Vern. name, Red or Sea-berry.

R. nutans, R. Br. Flowers November to January. Distributed Tasmania.

Chenopodium Tournef. *Etym.* From the greek, χῆν, χηνός, (chen, chenos,) goose, and πούς (pous) foot; the leaves of some species supposed to resemble in shape the foot of a goose. Vern. name, Goosefoot.

Ch. murale, L. Vern. name, nettle-leaved Goosefoot. Introduced Distributed Europe, North Africa, W. Asia, to N. W. India; introduced in North America, Tasmania and New Zealand.

Ch. album, L. Vern. name, white Goosefoot. Introduced, Distributed. Through colonisation dispersed over all zones. Contains Chenopodin.

Enchylæna, R. Br. *Etym.* Alluding to the succulent calyx, giving the fruit the appearance of a berry.

E. tomentosa, R. Br. Flowers September. Distributed throughout Australia.

Order Polygonaceæ, A. L. De Jussien.

Properties.—Often astringent and purgative; some species yield oxalic and malic acids; the seeds of others are farinaceous and esculent. The all important Rhubarb is the most important in the order. *Coccoloba uvifera, Jacq.,* contains kino an astringent. Some species of *Polygonum* yield Indigo. Many species of *Rumex* contain in the root Chrysophanic acid, employed in Psoriasis, &c.

Polygonum, Tournef. *Etym.* From the greek πολύς (polus) many, and γόνυ (gonu) knee, alluding to the many joints of the stem and branches. Vern. name, Bistort or Persicaria.

P. strigosum, *R. Br.* Flowers December to March. Distributed Tasmania.

P. minus, *Hudson.* Flowers January to June. Distributed Tasmania and New Zealand.

P. aviculare, *L.* Vern. name, Knotgrass, Wire Weed, Hogggrass. Flowers nearly all the year round. An alien. Distributed almost cosmopolite.

Uses.—A mild astringent, Diarrhœa, &c., externally for wounds. Fruit emetic and cathartic. The whole plant yields indigo-blue.

P. Hydropiper, *L.* Vern. name, water pepper or biting Persicaria. Flowers February June. Distributed North Temperate Hemisphere and to Australia.

Uses.—Contains Polygonic acid of an acrid, bitter taste and a volatile acrid principle. Plant when chewed imparts a hot and pungent taste to the tongue.

P. prostratum, *R. Br.* Flowers March April. Distributed Tasmania and New Zealand.

Muehlenbeckia, *Meissner.* *Ety.* In honor of Dr. Muehlenbeck, who closely studied the plants of Alsace.

M. adpressa, *Meiss.* Vern. name, Sarsaparilla, of the colonists. Flowers September November.

Uses.—Produces the same effect as the true *Smilax* species employed as alteratives and tonics.

Rumex, *L.* *Ety.* The old latin name, alluding to some resemblance of the leaves to the Roman war-arms. Vern. name, Dock and Sorrel.

R. crispus, *L.* Vern. name, Curled Dock. Flowers nearly all the year round. Distributed Europe, North Africa, Temperate Asia to Japan. Introduced in North America, Tasmania and New Zealand.

Uses.—Is an alterative, detergent and antiscorbutic remedy, mildly aperient, acting on the colon; may be given in Scrofula, cutaneous eruptions, and in the form of an ointment. Leaves may be advantageously used as an article of diet in scurvy, in the form of a salad. They are agreeably acid to the taste, owing to binoxalate of potash with tartaric acid, but lose their taste in drying. Juice of the leaves mixed with water affords an agreeable acidulous drink. The cortical part of the root is the most active. In America the concentrated tincture of *Rumex* is now prepared and used for the complaints above mentioned.

R. Acetosella, *L.* Vern. name, Sheep's Sorrel. Flowers nearly all the year round. Distributed. Widely diffused throughout Temperate and Arctic zones.

Uses.—Leaves used as a salad; abound in binoxalate of potash. 100lb. of the leaves yield 8lb. of the salt. The decoction of the

root or the powdered root are refrigerants and effectual anthelmintics. The seeds are astringent and useful in Hæmorrhage. In arid ground and at the end of summer the whole plant assumes a bright red colour,

R. Brownii, *Campdera*. Flowers November to May. Distributed Tasmania.

R. bidens, *R. Br.* Flowers December to March. Distributed Tasmania.

ERRATA.

ON page 27 of Vol. II., No. 2, line 19, for "Flowers September to January," read "nearly all the year round."

On same page after, "*Cusuarina*, *Rumphius*. *Etym.*," read: "Supposed to allude to the leaves resembling the feathers of the Cassowary."

NOTES.

MICRO-FUNGI.

At the last meeting of the Microscopical Society, one of the Vice-Presidents, Mr. F. Barnard, of Kew, also a member of the F.N. Club, read some notes on Micro-fungi recently forwarded to England by him for naming. Several of these have proved to be new, and one *Phragmidium Barnardi* (Plow.), found on a species of *Rubus* in Studley Park, has been named after him. We understand Mr. Barnard will be glad to receive specimens of Micro-fungi from our country friends, in exchange for other microscopic objects.

THE NATIONAL MUSEUM.

It will be remembered that in February last a deputation waited upon the Trustees of the National Museum, with reference to affording greater facilities to students at that institution, and were promised that the Director, Professor McCoy, should report upon the suggestions then made. His report, which is too long for publication here, appeared in the *Argus* of June 1st, but as it seemed the ideas of the deputation had been somewhat misunderstood, the Committee of the Club felt themselves called upon to make a further representation of the matter, and have forwarded a letter to the Trustees in reply, which will be found at length in the *Argus* of June 19th.

EXCHANGES.

H. WATTS would exchange Sea-weeds, mounted and named, for Australian Ferns, and would be glad to correspond with any person who could obtain parasites of Birds and Animals, either for exchange or otherwise. Address, 20 Wellington Street, Collingwood.

F. R. would be glad to exchange European Micro-Fungi for Australian Plants, or back numbers of "Southern Science Record." 46 Victoria Street, West Melbourne.

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THE

**Victorian Naturalist:**

THE JOURNAL AND MAGAZINE

OF THE

**Field Naturalists' Club of Victoria.**

The Author of each article is responsible for the facts and opinions he records.

**CONTENTS:**

|                                                            | PAGE |
|------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ... | 41   |
| Ballarat Field Club and Science Society. ... ..            | 43   |
| To Wilson's Promontory Overland. By J. B. GREGORY. ...     | 43   |
| The Orchideae of Victoria. (Part 7.) By C. FRENCH. ...     | 48   |
| Note. ... ..                                               | 52   |

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

. No Entrance Fee. Annual Subscription, including copy of proceedings 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

Copies of the Annual Report and List of Members for 1884-5, with Rules, etc., can be obtained on application to the Hon. Sec.

THE  
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AUGUST 1885.

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THE FIELD NATURALISTS' CLUB OF VICTORIA.

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THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 13th July, 1885.

The president, the Rev. J. J. Halley, occupied the chair, and about seventy members and visitors were present.

The following persons were elected members of the club:—Dr. H. C. Wigg, Messrs. C. Casimir and J. Searle, and Master Coles.

Dr. J. E. Taylor, F.G.S., was unanimously elected a honorary member of the Club.

The sub-committee on the protection of Native Birds' question, reported that in order to curtail the list of birds proposed to be protected, several groups of the smaller birds, such as larks, wrens, honey-eaters, had been struck out. Mr. A. J. Campbell, moved as an amendment, which was adopted, "That as the close season is at hand, it is too late for action this year, and that the matter be postponed for six months, in the meantime the sub-committee to endeavour to obtain further information on the subject."

Papers read—1. Mr. F. Wisewould read a paper, "Notes of a visit to the Chudleigh Caves, Tasmania." These caves are near Deloraine; they extend for more than a mile, and contain many large and beautiful chambers, intersected and traversed by a running stream. Mr. Watts contrasted these caves with those near Warrnambool.

An account of a tortoise found in solid rock, in a cutting on the great Northern Railway, New South Wales, was brought before

the meeting by Mrs. J. Simson, compiled from papers left by the late Mr. William Keene, F.G.S. The tortoise, which was found in 1859, and lived until the beginning of the present year, was apparently different to any known local species, and much resembled one found fossil near Armidale. This note gave rise to some discussion respecting the finding of frogs, etc., in mines and rocks.

Mr. P. Dattari exhibited a convenient tabular form for a Botanical key, taking for his illustration the order Ferns, as given in the late Rev. W. W. Spicer's *Dichotomous Key to Tasmanian Plants*. Mr. C. A. Topp, M.A., explained at some length the advantages claimed by Mr. Dattari for his plan as a help to beginners, and stated that in the classification and the use of terms, the compiler had simply followed Mr. Spicer. Mr. D. M'Alpine, in the course of his remarks, condemned the use of botanical keys, and urged students to adopt such a work as Hooker's *British Flora* for their guide. Mr. Dattari distributed lithographed copies of his table amongst those present.

Some remarks were made by Messrs. French, Lucas, and M'Alpine as to the desirability of taking up the subject of economic entomology in a systematic manner, and which will probably lead to practical results.

The following were the principal exhibits of the evening:—By Mr. E. Bage, living specimens of *Volvox globator*, under the microscope; by Mr. A. J. Campbell, a Gang Gang cockatoo, which had been purchased in the market that day as "game"; by Master S. B. Coghill, stalactites from the Chudleigh Caves, Tasmania; by Mr. A. Coles, an Indian pheasant, (mounted); by Mr. P. Dattari, fossils from near mouth of the Gellibrand River, Victoria, collected by Rev. W. T. Whan; by Mr. E. Dombain, eggs of pink eye-browed duck, and fronted *Ephthianura*, etc., from New South Wales; also a white snipe shot in County Cork, Ireland; by Mr. C. French, F.L.S., specimens of branches of shrubs, etc., affected by injurious insects; by Mr. J. T. Gillespie, Victorian birds' eggs; by Master R. Hall, twelve species of Victorian birds, also (in spirits) a young emu with two heads and one body; by Mr. W. Hatton, twenty species of Tasmanian birds' eggs; by Masters W. and G. Hill, Lepidoptera; by Master Hatch, geological specimens from Ararat; by Mr. W. Kershaw, Australian Lepidoptera; by Mr. H. Kennon, ring-tailed opossum (alive); by Mr. J. M'Kibbin, orchids in bloom, *Pterostylis vittata*, *P. concinna*, *Corysanthes pruinosa*, *Cyrtostylis reniformis*; by Mr. D. M'Alpine, lizard showing internal anatomy; by Mr. J. E. Prince, photographs of Orbost, Snowy River, and of several aboriginal ceremonies; by Mr. G. Renner, map of moon; by Mr. F. Reader, plants from Studley Park, order Liliaceæ; by Mr. O. A. Sayce, specimens of Vivianite from Hamilton, Tourmaline,

Orthoclase, Pholerite, Manganese, &c., from Maldon; by Mr. H. Watts, a young Octopus; by Mr. F. Wisewould, mineral specimens from Chudleigh Caves, Tasmania.

After the usual *conversazione* the meeting terminated.

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## BALLARAT FIELD CLUB AND SCIENCE SOCIETY.

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THE annual *conversazione* of the above Society was held in the large hall of the School of Mines, Lydiard-street, Ballarat, on Friday evening, 3rd July, 1885.

The president, Mr. Jas. Oddie, J.P., occupied the chair, and there was a large attendance of the members and their friends, some 200 persons, being present.

The president, in the course of his remarks, drew attention to the many advantages to be derived from the study of natural science in general; the Rev. W. Williams gave a lecturette on "Spiders as Modern Balloonists," and referred to the flight of spiders recently observed in many parts of the Western District; and Mr. W. H. Wooster gave a popular account of the "Natural History of the Bryozoa."

The exhibits consisted in most instances of microscopic objects, and twenty instruments were in use by the different exhibitors. The following were the principal exhibits:—By Mr. W. Burbidge, scales on insects' wings; by Mr. W. Corbould, the crystallization of metals; by Mr. A. Doepel, parasites and cheese mites; by Mr. Grayson, vegetable physiology and diatoms; by Mr. F. M. Krausé, F.G.S. (hon. sec.), specimens of dolerite, diabase, felsite-porphry, and porphyrite, with sections of same under polarized light; by Mr. F. J. Martell, circulation of blood in frog, and vinegar eels; by Dr. Ochiltree, tissues of internal organs of man; by Mr. A. Mica-Smith, B.A., micro-photographs; by Mr. H. Sutton, micro-photograph of sections of diatoms, polyzoa, under high powers; by Dr. Usher, human physiology; by Rev. W. Williams, anatomy and physiology of *Arachnidæ*; by Miss Wooster, Victorian mosses and sea-weeds; by Mr. W. H. Wooster, Victorian bryozoa.

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## TO WILSON'S PROMONTORY OVERLAND.

BY J. B. GREGORY.

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OUR party was to consist of three, and our objects were not altogether in accord or altogether different. We were all off for a

holiday in search of health and recreation. Mr. Lucas, in addition, had definite intentions of making collections botanical, entomological, and conchological. As Mr. Robinson is not one of the joint authors of this paper, we may be excused from unfolding what his special aims may have been. Mr. Gregory, in addition to a liking for fresh air and exercise, has a fancy for natural scenery and perhaps a little for topography.

We proposed to take train from Melbourne as far as Trafalgar on the main Gippsland line, and thence walk by the direct *route* through Mirboo and Forster to the end of Wilson's Promontory, and to return by whatever *route* circumstances might suggest. Careful inquiries were made before starting as to the road, and many contradictory reports obtained. One man, for instance, said that there were seventeen miles of glue-pot between Trafalgar and Mirboo, but the road from Mirboo to Forster would be better. Another described the road to Mirboo as good. A third said that the difficulties of the journey would commence when we crossed the Derby, thirty miles the other side of Forster. There was one reason that operated in the choice of the *route*, and was sufficient to stifle the warnings as to swamps and glue-pots, and that was a desire to see the great forest of South Gippsland. It was now possible to see it in its primæval grandeur. But the passing of the new Land Act and commencement of the Great Southern Railway would soon be followed by a rush of selectors; in another year even it might be no more.

Mr. Lucas and Mr. Gregory, accordingly, on the Saturday in Christmas week, started by the early train for Trafalgar. It rained heavily during the journey and after their arrival at Trafalgar, where they had to wait a couple of hours for the luggage train which brought on their pack-horse. Trafalgar is a small village at the foot of wooded ranges, which rise to the south of it say 1000 or 1200 feet. The people said there had been much rain lately, and it was likely to continue so long as the wind was from the north.

As soon as the horse arrived, we loaded up and started. Our pack consisted of a tent 6 feet by 8 feet with a fly, about ten days' provisions, a change of clothes each, rugs, billies, &c., and Mr. Lucas's collecting apparatus.

The road at once began to ascend. As it got higher and steeper, the mud got deeper, being knee-deep in places. Most of the land had been taken up on each side of the road, and much of it had been cleared and the timber ringed, giving an extensive look-out. We passed a dray drawn by fourteen bullocks. It did not appear heavily loaded, but it sank in up to the axles.

On reaching the top of the ridge, the road became drier, and about five miles from Trafalgar descended to Narracan Creek, a fine stream which crossed our path from left to right. There was a rich



patch of clover here, which our horse was very loath to pass. In fact he seemed quite sulky when we determined to go further. After passing Narracan Creek the clearings ceased, and the road again became soft. In about two miles we came to another creek, a tributary of Narracan, about eight miles from Trafalgar, where we determined to camp. This was partly because we did not want to make a long journey the first day, and partly to let Mr. Robinson who was to reach Trafalgar by the last train that night, overtake us before we started the next morning.

When it has been raining all day, camping does not look very inviting, but a tent will keep out any ordinary rain. Boughs laid on the ground with a piece of waterproof on the top of them make a sufficiently dry bed, and if wood be selected which is neither green nor rotten, it will burn with proper kindling material. This, in the present case, was found in some pieces of timber knocked off the under-side of a dead log which lay across other sound logs so as to keep it off the ground and therefore from getting sodden. We were therefore sufficiently comfortable, notwithstanding that it rained and blew a good deal during the night.

It was still showery the next morning, nevertheless we enjoyed a bath in the creek, and just as we had finished breakfast we were joined by Mr. Robinson, who had come on to Trafalgar that morning. At about eleven o'clock we started for Mirboo. Another mile and a-half brought us to Macdonald's track, where there was a house. Macdonald's track, west of the point where we struck it, runs about east and west, following the ridge which divides the waters which flow into the Moe and thence into the La Trobe and the Gippsland Lakes, from those which flow by way of the Tarwin into Anderson's Inlet. At about the point where we struck this track, the watershed turns suddenly to the south while Macdonald's track continues in an easterly direction along a ridge separating the waters of the Narracan and the Morwell. The direction of the track we were following being nearly south, was much that of the watershed which Macdonald's track had left, but it did not keep to the ridge exactly. It was first a little to the west of it, crossing a small tributary of the Tarwin. It then again made the ridge and crossed it into the Morwell watershed. This part of the road passed through a forest of enormous timber with dense undergrowth, and the road was deep with mire. As, however, we turned further away from the ridge on the Morwell side, the land became poorer and the timber stunted, at the same time the road became dry. At about the point where we passed out of the dense forest into the more open and poorer country, we passed several selections upon which were houses and clearings, and the road continuing to descend, we at last came to Bear's Creek, a tributary of the Morwell, at a spot marked on the maps as Village reserve, about fifteen miles from Trafalgar. Passing through this,

we crossed the line of the new Mirboo railway, and the land still continuing poor, the timber small, and the road dry, we continued on to Mirboo North, a distance of about three miles, where the track again made the watershed line between the Tarwin and the Morwell, and where had it not been for the extensive clearings we should have been again among tall timber, as could be seen by the dead trunks still standing. Thence the road continued to follow the ridge between clearings more or less extensive on both sides, and keeping tolerably dry, until by a very steep and rough descent it turned down to the Tarwin, which we made just before dark, having come that day seventeen miles.

We did not go right down to the Tarwin, but camped on a creek which crossed the road about quarter of a mile from it. Here we pitched our tent a few feet from the foot of a large dead tree about 200 feet high, against which we made our fire. While at tea a discussion arose as to whether the tree would catch alight, and if so, which way it would fall, and the last member of the party before turning in, put the fire out as well as he could, all except a few sparks. In doing so, however, he found that the tree was hollow and that the fire had burned through it. We slept soundly till about three o'clock in the morning, when waking up we found the tree was on fire all up, flames and sparks rushing out of a hole about 100 feet from the ground with a roar like a furnace. We got up and moved our camp out of reach and lay down, and went to sleep again. At about five o'clock we were all awake by a crack. Three heads were at once thrust out of the tent door in time to see the tree come down, at first slowly, then with gradually accelerated speed, breaking into innumerable smoking fragments with a loud report.

We started at about nine o'clock the next morning, crossing the Tarwin, which was a good stream about up to the horses knees, and passing through Mirboo South. The clearings once passed, the track began again to ascend a spur separating different tributaries of the Tarwin, which led across the Hoddle Range, on to another spur separating the waters of Stockyard Creek from the waters of the Franklin. For some time after leaving Mirboo, the road was tolerably dry, but after the first eight or nine miles it became very wet, standing in pools covered with a green swamp grass, which with short intervals continued all the way until we came close to Forster. There was a forest of enormous timber, with dense undergrowth, on both sides, with only one clearing. At about dark we made Stockyard Creek, just outside Forster. We had come, as measured on the map; twenty miles, by local estimate, twenty-three. We camped upon open ground, near old gold workings. Many gullies came down from different directions to join the creek, separated by

thick spurs covered with low scrub with light foliage, forming a pleasing contrast with the mighty forest behind.

The next morning we passed through Forster, and saw Mr. Barry the line repairer, and obtained from him much useful information as to the Promontory tracks. After leaving Forster, the track lay across heathy plains, sloping towards Corner Inlet. On our left, behind us, rose the wooded ranges we had passed through, from which ran a long barren spur on our right, which culminated in bald hills of considerable height, and then died down into the isthmus which joins the Promontory to the mainland. Innumerable creeks containing a peaty water, rising in this range and running to Corner Inlet, crossed our path, with an occasional belt of small timber. Before us rose the misty mountains of the Promontory. Then we gradually left the hills behind us, and found ourselves upon the sandy isthmus between Corner Inlet and Shallow Inlet, and by sundown had reached the homestead of Yanakie Station. It is nineteen miles from Forster to Yanakie, and there is no house by the way. Here we were very kindly entertained by Mr. Miller, Mr. McHaffie's manager, who insisted upon taking us in, notwithstanding our travel-stained appearance, and accommodating us for the night. After breakfast the next morning, he put us upon the way to the beach. After about half a mile of hummocky country, interspersed with she-oaks, we came upon a region of sand dunes, pure sand white as snow, without a particle of vegetation, rising into hillocks some fifty feet high, of curious shapes, from the tops of which the sand was blown into a cloud like smoke. In the hollows the ground was a little firmer, a thin incrustation of lime being apparently deposited over the sand. The transition from the heathy pastures of Yanakie to these utterly barren dunes was very sudden. In some places vegetation could be seen struggling with the sand along a narrow border—a bush or a hillock or a tree with the tips of its leaves just above the top of a hummock or heap of sand, in other places the vegetation, yet uninjured, stretches to the very foot of the sand dune by which it will be soon engulfed. Thousands of acres of Yanakie Station have been swallowed up by these dunes, and they threaten to cover the whole of it. After passing for about two miles and a half across this sandy waste, we came out near the beach. We had now before us seven miles of hard, smooth, white sand, the blue sea rolling in on our right in long white breakers, a range of rugged hummocks upon our left, and before us, at the end of the beach rose the granite mountains of the Promontory, tinted according to their distance with different shades of blue and violet. There was a fresh breeze off the sea, filling the air with white spray. Off the coast were fantastic islands, mere knobs of granite poking their heads above the water. Sea birds ran along the sand before us, rising into the air screaming, as we came near. There could not be

conceived a better or pleasanter road to walk upon, so we made good progress for the Derby. Here, the mountains coming down to the sea made further progress along the beach impossible. A sand-bank closed the mouth of the creek, we crossed it, and turning up the left bank, again struck the telegraph line which we had left at Yanakie.

(To be continued.)

## THE ORCHIDÆ OF VICTORIA.

By C. French, Government Botanist's Department.

(Part 7.)

### PRASOPHYLLUM AUSTRALE, (R. Brown.)

This pretty *sp.*, approaches in many respects some of the more stunted or dwarf forms of *P. elatum*, differing very much however in colour, also by the lighter green stem, and thus seems to be more like *P. patens*, a pretty though a much commoner *sp.*, a description of which will be given as we proceed with the paper. In the flat-ground about Western Port, I have found several specimens of this orchid. In the "Flora" we find it described as a *sp.*, having flowers striped with brown and yellowish green. I have not noticed any stripes, although the colour of flowers seems to be of a greenish white and brown. The leaf sheath as described by Bentham, being, as he says, much longer than in most other *sp.* In determining many of the *sp.*, of this remarkable genus, it will be absolutely necessary to call in the aid of a scientific botanist, who could critically examine the specimens, and thereby save a deal of guesswork and the consequent disappointments in connection therewith. To grow this *sp.*, damp loamy soil should be used, plenty of clear water, and a little shade from the direct rays of the sun. Height from 1 to 2 ft., flowers several in a spike. Blooms in December and January. *P. lutescens* of Lindley, is identical with this *sp.* Found also in Tasmania and in South Australia.

### P. BREVILABRE, (Hooker.)

This is a *sp.*, which I never remember having found myself, consequently I am obliged to give you briefly, a description in accordance with that given by Bentham and Mueller, viz.—Allied to *R. patens* in aspect, in the size of flowers, and in the ovary, stems mostly under 1 foot high, the leaf sheath broad and loose, dorsal sepal under 4 lines long, petals rather shorter, narrow and acuminate. Labellum sessile This *sp.*, has been found in the Moe swamps by F. Mueller and others, also in East Gippsland, Tasmania, New South Wales, and in Queensland. Time of flowering unknown to

me. Cultivation same, I should think, as that recommended for former species.

*P. PATENS*, (R. BROWN.)

A very pretty, and in some districts common *sp.*, to be found on flats, particularly those bordering on ranges near Dandenong, Frankston, Dromana, Mt. Macedon, Grampians, Marysville, &c. To those who collect orchids as an instructive and pleasurable pastime, this *sp.* will be not difficult to distinguish, principally because of its abundance, although being variable, it may easily, to an ordinary observer, be mistaken for either *P. alpinum* or *fuscum*. The flowers for the size of the plant being somewhat small, of a yellowish green colour, the labellum being bordered with white (a point in the recognition of this *sp.* which should not be overlooked.) Labellum as long as the petals, sessile at the base. To grow it well use good strong yellow loam, keep damp, with always good drainage. Place say twelve tubers in a shallow pot or pan, and with very little care these will flower very abundantly. In growing specimens of this genus, I had almost omitted to mention that they should have as much air as possible, otherwise, as with most other plants, they become weak and "drawn," and thus lose much of their hardiness and beauty. Flowers in January and February. Height 6 inches to 2 feet. Found also in Queensland, New South Wales, Tasmania, and South Australia. *P. truncatum* seems to be identical with this *sp.*

*P. FUSCUM*, (R. BROWN.)

A variable species nearly allied to some forms of *P. patens*, usually rather smaller with smaller flowers, and the sepals and petals narrow and darker coloured, but the extreme forms of the two species only to be distinguished by the labellum. Here we again find our difficulties, the descriptions given by Bentham of *P. patens* seems to so closely resemble this plant that the detection of such differences must be done by a most practised eye, or else confusion will be certain to arise. We must however, "flounder about" and do our best should we come across this *sp.* to compare the specimens and should we fail, it would be no great disgrace, seeing by the synonymy of these curious plants, how many greater than we have been temporarily mistaken. And while I am getting thus "mixed" in my ideas, I cannot help thinking (and I am sure most of you will agree with me,) that without wishing in the slightest to blame our scientific zoologists here, that had the Zoology of Australia been as well worked out as the botany has been, by Baron von Mueller, there would have been little occasion for Mr. Caldwell, (or anyone else) coming to Australia to work out the

peculiarities of the *Monotremata* or any other animals, be they duck-billed or otherwise.

To return to the orchid, I should say that the same culture as that recommended for the former *sp.* would suffice. *P. alpinum*, *P. affinis*, and *P. rostratum*, are synonyms of this *sp.* Found also in Queensland, New South Wales, Tasmania, and in South Australia. Mr. Bentham adds some copious notes to his description of this *sp.*, which may be found in vol. VI., page 340.

I may mention before closing this description, that this *sp.* was formerly known by the name of *P. alpinum*, and seems to be equally at home whether growing in moist flats, or on the tops of our highest mountains.

### SECTION 3. GENOPLESIMUM.

Labellum obtuse, or contracted into a claw at the base, articulate on a horizontal claw-like basal projection of the column. Stem slender, the leaf almost or quite reduced to a sheathing bract. Flowers very small.

#### *P. NIGRICANS*, (R. Brown)

Stem very slender, under 6 inches high, with a single leaf  $\frac{1}{2}$  to  $\frac{3}{4}$  inches long. Flowers very small, in a spike  $\frac{1}{2}$  to 1 inch, usually dense and drying of a dark purple or almost black. Sepals broader than in the following *sp.*

This little orchid I have never found, so that I can give you no further account of it, than the abbreviated description taken from the "Flora." I may however, say that I take it to approach *P. despectans*, or some other of the smaller *sp.*, and if this be the case, it would be of little value for cultural purposes, excepting of course to complete a collection. I may also mention that Baron von Mueller in his Census, gives this *sp.* as being also from Victoria, but I am not aware from what part. Found in New South Wales, Tasmania, and in South Australia.

#### *P. RUFUM*, (R. Brown.)

Stem slender, 6 to 8 inches high, the leaf reduced to a sheathing bract near the spike,  $\frac{1}{2}$  to  $\frac{3}{4}$  inches long. Flowers, the smallest in the genus in a spike of  $\frac{1}{2}$  to  $\frac{3}{4}$  inches. Sepals tipped with a small point but (always) without the gland of *P. nigricans*. This is another *sp.* which I have as yet not myself found, and although the characters given seem very clear, it appears that it has also varieties, I will thus simply give you its synonymous and geographical range. Believing it to be (as regards culture) identical with the former *sp.* Found in Queensland, New South Wales, and Tasmania, and at Wilson's Promontory, Victoria, by F. Mueller. *P. nudum* is said to be identical with this *sp.*

*P. DESPECTANS*, (Hooker.)

Stems slender, leafless excepting a sheathing bract of about  $\frac{1}{2}$  inch below the spike. Flowers narrow and dark coloured as in *P. rufum*, but longer, the spike dense,  $\frac{1}{2}$  to 1 inch long. Labellum shorter than sepals.

I believe that we are indebted to a member of this Club, Mr. T. McKibbin, for the opportunity of first adding this pretty little plant to the flora of Victoria, and as I have mislaid the excellent paper read by him on the orchids of the Maryborough district, I am unable to give you the exact locality where he found it, but I believe it was somewhere in the vicinity of Maryborough. I have not seen this *sp.* in a living state, although Baron von Mueller at once recognised the specimen as the Tasmanian *P. despectans*. For cultural purposes, it would I should say, rank with the former mentioned *sp.*, and the soil recommended for these would probably be the same. Found in sandy soil near Hobart in Tasmania, also according to the census in South Australia.

*P. ARCHERI*, (Hooker)

Rather taller than *P. fimbriatum*, a New South Wales *sp.*, the leaf reduced to a sheathing bract with a short erect almost subulate lamina close under the inflorescence. Flowers rather larger than in the other *sp.* of the section, few together, spike rarely one inch long. Labellum articulate and fringed with long hairs. This is another of Mr. McKibbin's finds, and as in the former *sp.* does him credit as a close observer, for these slender *sp.* when growing amongst scrub or grass, requires a very sharp look-out to detect them. I am indebted to Mr. McKibbin for the tuber from which I flowered a very fine and perfect specimen. Since writing these notes, I have flowered another *sp.* which the Baron has proved to be *P. Archeri*, and, I regret to say that Mr. McKibbin lost his tubers, so mine I believe to be the only one left; and this is (or was a few months since,) in the very large and interesting collection of native orchids which I formed at the Botanic Gardens, and which was handed over by me as a donation, previous to my being transferred to this department. The cultivated specimens I found to be more robust than the dried specimens which I have seen from Tasmania, gathered in their native haunts, but this is only to be expected, still it goes to show how little dependance can be placed on specimens which have been cultivated, and how necessary it is to have a national herbarium, in which every form, variation, and transition has a place. To grow this little orchid, I found the top soil from grassland to suit it best, and with a liberal supply of clean water when coming into flower, it will amply repay (as a botanical

plant,) any little trouble bestowed upon it. Found also in Tasmania, and was hitherto confined to that colony.

*P. INTRICATUM*, (C. Stuart in Herb. F. Mueller.)

A slender plant with the habit of *P. fimbriatum*. Flowers brown or pale yellow, with the labellum purple.

This curious little plant which was found and exhibited at this Club first by my son, is very much like *P. archeri*, so much so that it is difficult for anyone excepting a thoroughly good botanist to determine them. It was found on top of the dry sand-hills at Frankston, and, of course, at once pronounced by its finder to be a new orchid, the usual reference to the Baron was resorted to, with the cheerful result, a well-known Tasmanian plant but new for Victoria, (or at least for the district in which it was found,) but very interesting, and thus the finder was rewarded for his perseverance, although somewhat disappointed. I have no reason to describe this *sp.* further, as the novelties found by other members of this Club, and by myself since the Club's inauguration, have been so ably worked up by the Baron in the columns of the "S. S. Record," Pharmaceutical Society's Journal, and the "S. Naturalist," that further remarks will be I think unnecessary. To grow it, (to complete the collection in pots,) it should be planted in a shallow pot of sand and gravelly loam, and should not be kept too moist otherwise the tubers are apt to decay. Great care should be taken with these smaller kinds, that good and efficient drainage is always seen to, as well as care as to keeping the tubers while at rest, a matter which I shall again refer to before closing my paper. Flowers in January and even later. Found also in Tasmania. This will conclude the *sp.* of the genus *Prasophyllum*, the next in order being *Microtis*, which will form the subject of my next number.

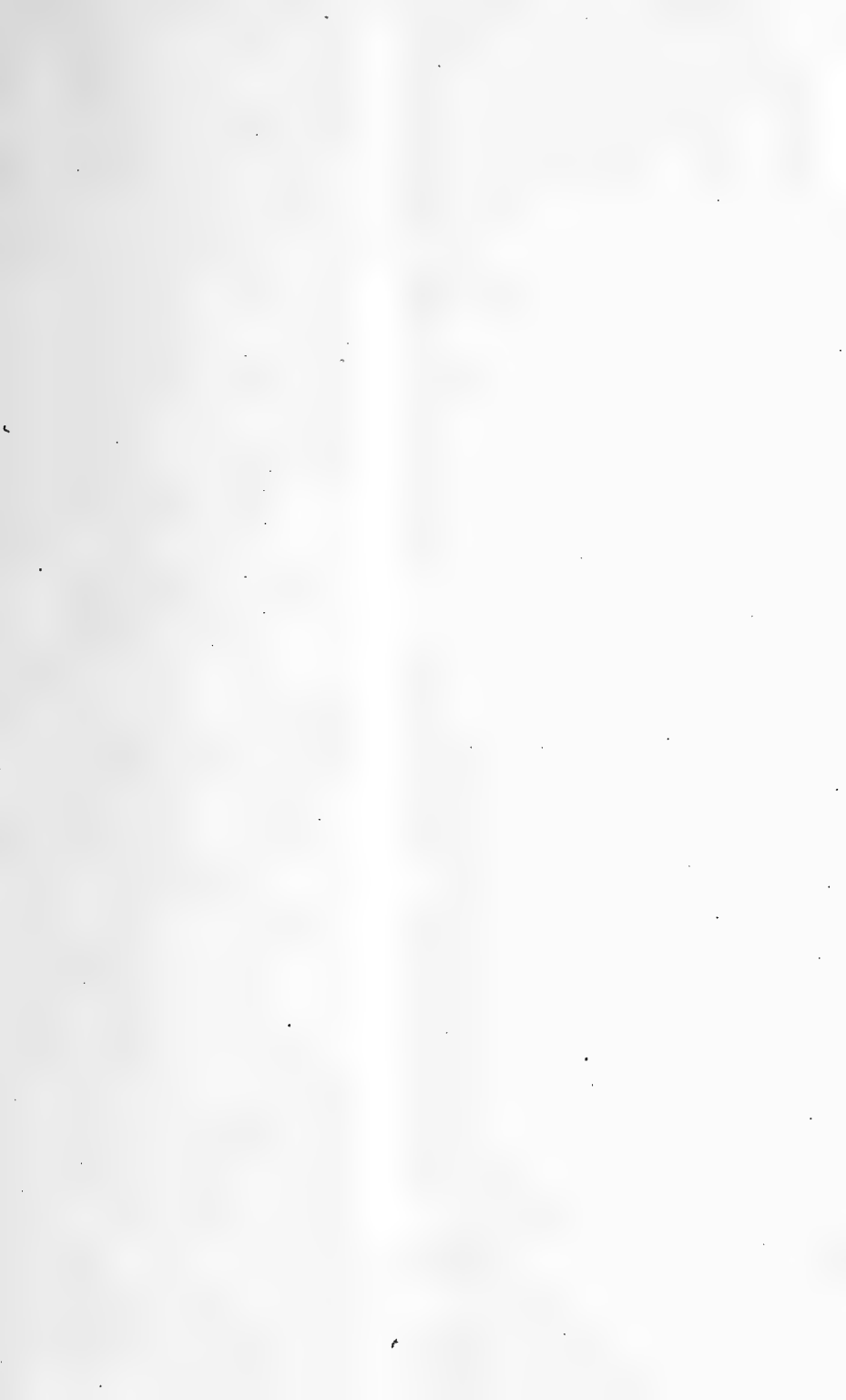
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#### NOTE.

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By approval of the honorable Graham Berry, Chief Secretary, a new edition of Baron Von Mueller's volume on "Select Plants for Industrial Culture and Naturalisation," is now passing at the Government Printing Office through the press. It will appear towards the end of the year, and thus available also for use at the Colonial Exhibition in London. This will be the Sixth edition in the English language, and it will be still further enlarged than the American one, which appeared last year at Mr. George Davis' great establishment in Detroit.





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CONTENTS:

|                                                                                       | PAGE |
|---------------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                            | 53   |
| To Wilson's Promontory Overland. By J. B. GREGORY, M.A.,<br>and A. H. LUCAS, M.A. ... | 54   |
| Notes on a Trip to the Caves near Chudleigh, Tasmania. By<br>F. WISEWOULD ...         | 59   |
| CORRESPONDENCE ...                                                                    | 63   |

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

No Entrance Fee. Annual Subscription, including copy of proceedings 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

Copies of the Annual Report and List of Members for 1884-5, with Rules, etc., can be obtained on application to the Hon. Sec.

THE

# Victorian Naturalist:

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VOL. II., No. 5.

SEPT. 1885.

No 21

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## THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 10th August, 1885.

The president, the Rev. J. J. Halley, occupied the chair, and about fifty members and visitors were present.

The hon. librarian acknowledged the receipt of the following donations to the Club's library:—

"Proceedings of the Royal Society of Victoria," 19 vols., from the Society, "Proceedings of Linnean Society of New South Wales," Vol. X., part 2, from the Society;" "Proceedings of Royal Society of Queensland," Vol. I., parts 2, 3, and 4, from the Society; and also announced the receipt from Mrs. Curdie, of a small collection of foreign coleoptera, formerly belonging to the late Dr. Curdie, as a donation to the Club's museum.

The hon. secretary read a short account of the Club excursion to Cheltenham on the 8th inst., which, though rather poorly attended, proved most enjoyable on account of the splendid day. Some of the earlier spring flowers such as *Epacris impressa*, *Hibbertia fasciculata*, *H. densiflora*, *H. stricta*, *Acacia suaveolens*, and *Hovea linearis* were more or less abundant. The only orchid noted in bloom was *Cyrtostylis reniformis*, but plants of *Pterostylis barbata* and *Lyperanthus nigricans* were seen. The ferns *Schizæa bifida*, and *Gleichenia circinata* were found growing in one of the hollows. The pools which occur in the numerous hollows proved good fishing grounds for fresh water crustaceans, &c., amongst other captures being the large silvery-grey water spider, *Argyrometra aquatica*; the small red water spiders *Hydrachna globulus* and *Limnochares aquatica*, the shield shrimp, *Apus Cancriformis*, and several fresh water insects and larvæ.

The following ladies and gentlemen were elected members of the Club:—Miss Lange, Miss A. Lange, Mrs. Lange, Miss Rankin,

Rev. W. T. Whan, M.A., Messrs H. Andrews, I. Batey, W. Brook, John Dennant, C. Frost, M. Gamble, A. J. Hall, F. C. Lange, G. Meyler, W. E. Pickles, F.R.M.S., R. N. Smith, and Wm. Taylor.

Papers read:—1. Mr. C. A. Topp, M.A., read the first part of a paper entitled "A geological sketch of South-western Victoria," contributed by Mr. J. Dennant, of Hamilton. This, after giving a geological description of the district, gave a detailed account of the older formations occurring between the Glenelg and Wando rivers, county of Dundas.

2. The hon. secretary read the first part of a popular paper on "The Habits of Native Birds," contributed by Mr. Isaac Batey, of Sunbury. The writer's observations respecting crows, which formed the subject of this part, created considerable discussion among those present.

The following were the principal exhibits of the evening:—By Mr. E. Bage, three sp. of water spiders, shield shrimps, water beetles, and small entomostraca obtained at Cheltenham excursion, also *Vorticella* under the microscope; by Mr. F. G. A. Barnard, geological specimens from Buninyong; by Mr. A. W. Coles, collection of birds from Townsville, Queensland; by Rev. A. W. Cresswell, M.A., flowering stem of the larger grass-tree *Xanthorrhœa australis*; by Rev. J. J. Halley, cheap portable microscope stand, by Baker, of London; by Mr. T. J. Hughes, bird of paradise; by Mr. H. Kennon, small pearl obtained from an oyster purchased in Melbourne, also human teeth found on beech at Stewart Island; by Mr. T. A. Forbes-Leith, the American migratory thrush, *Turdus migratorius*, British song thrush, *Turdus musicus*, American red-winged blackbird, *Ageleus phœniceus*, and British blackbird, *Turdus merula*, also feathers of the emu with double and triple shafts; by Mr. J. McKibbin, orchids in bloom, *Pterostylis curta*, *P. pedunculata*, *P. nutans*, also an apparently hybrid species of *Pterostylis*, four species of lizards, with double and triple tails; by Mr. F. Reader, fungi *Polyporus borealis*, Fr., new to Australia, and *P. ochroleucus*, Berk., *P. tardus*, Berk., and *Didymium farinaceum* hitherto unrecorded for Victoria; by Mr. G. Rose, fossils from Cheltenham.

After the usual *conversazione* the meeting terminated.

## TO WILSON'S PROMONTORY OVERLAND.

BY J. B. GREGORY, M.A., AND A. H. S. LUCAS, M.A.

### PART II.

THE track now for about a mile skirted a grassy flat which was bordered on our left by a swamp covered with tall tree scrub, and on our

right by the foot of the mountains, the tops of which were now covered with a wide flat cap of clouds. It then turned to the right through a saddle in Mount Leonard, and in three miles, after crossing two creeks and several gullies and their intervening ridges, descended again to the beach on the shore of Leonard Bay. The mountains near the sea were for the most part bare of timber, though there were occasional belts and patches, especially in the gullies, of no great height, and strewn here and there with granite boulders of all shapes and sizes. The water we crossed after leaving the Derby was very good. That at the mouth of the latter stream was otherwise, the spring tide apparently rising into the marshes. After making the shore of Leonard Bay, we again kept to the waters edge along the hard white sand for half-a-mile, when we came to a steep range jutting out into the sea in a point called Pillar Point. Over this the track went and descended on the other side. At its base ran a stream called the Tidal River, which we crossed and camped for the night on the grassy flats opposite. We had come fifteen miles from Yanakie and five from the Derby.

We were now on the shore of Norman Bay. To the north-east, looking up the valley, the view was closed by the densely-wooded slopes of Mount La Trobe, rising to a height of 2400 feet. To the north was Mount Bishop, say 1000 feet lower, a spur of which we had just crossed. It was strewn with boulders, and ran down in a steep slope covered with brushwood, the foot of which was washed by the Tidal River. A spur from Mount Oberon formed the southern boundary of Norman Bay.

Starting the next morning, we left the telegraph line and turned towards a saddle in the spur last named, locally known as the bad saddle. A steep and slippery track led up to a narrow pass between two conical peaks. On reaching this point the party divided, two of us turned to the left, towards the summit of Mount Oberon, the third, preferring to collect shells, led the horse down to the beach on the other side of the saddle. Keeping along the spur we met with no great difficulty beyond some dense scrub in the hollows. On the top of the mountain, fortunately, some tall boulders rose above this, and so gave a look-out all round, except where the view was shut in by the higher masses of Mount La Trobe and Mount Wilson. We were about 2000 feet above the sea, and about a mile from the water's edge. It would take long to describe the view of peaks and islands, and the vast expanse of sea and sky which rewarded our climb. We descended by a steep gully down which trickled a stream of water from a spring, of which we drank as it flowed from the rock. Continuing our march the track now skirted that part of Oberon Bay, locally known as the Little Bay, and crossing another rocky spur, came out on the sands of the Great Bay, as the larger division of Oberon Bay is locally called. The mountains here recede

from the shore some miles, leaving a large flat, lightly timbered. Immediately on descending on to the sands, we crossed a fresh running creek. We then kept for about a mile along the sands of Oberon Bay, when we came to another creek. This we did not cross, but turning to our left soon struck a track which, in a distance of two or three miles through small timber, brought us again to the telegraph line, and at the same time to a creek. It was now dark, so here we camped for the night. We had come that day, leaving out of account the ascent of Mount Oberon, about six miles.

The next morning we crossed the creek, or rather two creeks close together, and ascended the hill on the other side, known as Martin's bill, which brought us out on top of a high open plateau with hills all round, covered with boulders. Several times we descended into thick wooded valleys, through which flowed fine streams of clear cold water, shaded by tree ferns. About mid-day we came out upon the brow of Mount Southern overlooking the lighthouse. It is upon a rocky point rising boldly out of the sea to a height of some 350 feet, but it appeared a long way below us as we looked down upon it. Out to sea was an archipelago of islands, the Rodonda, the Anzers, Hogan Island, the Moncure Islands, and others. There was no sign of the hand of man anywhere, except in the track and telegraph descending the mountain side, and the few acres of land on the top of the point on which stood the lighthouse. We did not at once descend, but returned to the last creek we had crossed but a little way back, where we unloaded our packs and left our horse. We then went down to the lighthouse. Here we found that our intended visit had been telegraphed from Forster, and that we were the first party of tourists, as far as was known, who had ever visited the place by land. Mr. Gregory recognised Mr. Martin, the lighthouse-keeper, as having seen him at Cape Otway five years before. After viewing the lighthouse and its surroundings we returned to the creek where we had left our packs and camped for the night. We had come that day about six miles.

The next day we returned by the road by which we had come, and camped on a creek in a gully on Mount Leonard.

The next day we returned to Yanakie, where we were again kindly entertained by Mr. Miller.

The next day Mr. Robinson borrowed a horse and rode on ahead. The party was thus reduced to two, who continued to return by the way by which we had come until we had passed the head of Shallow Inlet. We then took a track which turned off from the telegraph line to the left, and after crossing Dividing Creek, which runs into the head of Shallow Inlet, separated into two, the left-hand turning going south to Frazer's station, the right going north of east over the Hoddle Range to the mouth of the Tarwin, at the head of Anderson's Inlet. This latter we took. It lay across heathy plains, gradually rising



towards the brow of the Hoddle Range, crossing several creeks lined with belts of small timber. Just before making the brow of the range the road became somewhat steeper, but not for long. The height of the range, perhaps 1000 feet, being made up chiefly in the long slope up from the sea. After making the brow of the range, it is difficult to say whether the track went up or down. It crossed an elevated heathy plateau, over which the evening breeze blew keenly, with belts of small timber in the hollows. As we crossed no creeks, we were apparently following a watershed line. Before us we could see, from time to time, the Bald Hills, near which we expected to find a creek and to camp. At about sundown we descended into a hollow just under the Bald Hills. Here we found a good creek and timber and a fenced enclosure. It was a complete solitude, not having seen a human habitation since we left Yanakie. We had come that day twenty-two miles. It rained during the night.

Rising the next morning, the sky was overcast so that we could not see the sun. We bathed in the creek, and as we were proceeding to get breakfast we saw clouds gathering round the Bald Hills, black as we had seldom or never seen before, and it began to thunder and lighten and rain with a great downpour. We took shelter in our tent, but the wind so bent down the saplings to which it was tied, that the canvas hung in bags and consequently let in water. When the rain ceased we packed up and continued our course to the Tarwin. The country was similar, descending with an almost imperceptible slope. There was a strong biting wind in our faces, and occasional showers. After a while we got among clumps of tea-scrub and left a branch track to our left which we understood went to Black's station, and in another mile or so we came upon selectors' fences and habitations, the first we had seen since leaving Yanakie, and soon after we came out on the banks of the Tarwin. When we had crossed it before at Mirboo South, it was a fine mountain stream about up to the horse's knees; it was now a tidal river as big as the Saltwater at its junction with the Yarra, and capable of floating a craft of considerable size. On enquiry we learned that it was about four o'clock, for our only watch had stopped and we could not see the sun all day, that the bridge was two or three miles up, and it was doubtful whether it was so finished that we could cross it. We determined, therefore, to try the ferry. Our packs were accordingly put in a small dingy and the horse had to swim, and we soon found ourselves on a piece of grassy land on the opposite bank, over which the water was rapidly rising. We loaded as quickly as possible and endeavoured to keep the track. This it was difficult to do where it was all under water. The result was we soon got off it into a ditch, where the horse went down, sending our top packs and one of the saddle-bags into the salt water. We got in up to our middles in getting it out again. This was not promising late in the

afternoon, but there was nothing to do but to load up again and make the best of our way on to the higher ground. Getting out of the water the track turned up a slope covered in the first instance with tea-scrub and afterwards a small gum timber. In a little way it skirted a gully in which was a spring of good water. Here we determined to camp, and having pitched our tent, proceeded to light a roaring fire in a sheltered hollow at the top of the gully, by which we dried our clothes and rugs, got supper and turned in. Notwithstanding our mishap we slept quite warm and dry. We had come that day about ten miles.

The next morning the road continued to pass through not dissimilar country, skirting at some miles distance Anderson's Inlet. Soon we found selections upon one side or both sides, which continued till we reached Screw Creek. It was low tide when we got there, and we found the water a little above our knees, with a good rocky bottom. After crossing the creek the selections ceased. We were directed a near cut to the left, which in about a mile from Screw Creek, took us to a creek of fresh water, where we had lunch. Thence we continued across heathy plains with belts and clumps of small timber. Towards evening we could make out the Bass ranges in front of us, and soon after the top of Cape Woolamai. Turning off the main track by a branch track to the right near a stockyard, at about sun-down we reached the Powlett. Here again there was the house of a settler, though it appeared empty except one old man who seemed to be care-taker. We camped by the roadside. We had come that day twenty miles.

The next morning we bathed in the Powlett. It was a good stream of fresh water about up to our middles, say fifty feet across. There was an old bridge of round timber over it. While we were loading up, Mr. Griffith, a neighbouring settler, came by and directed us how to find our way by a short cut over the hills to the Bass, which we accordingly reached without passing through Kilcunda. We lunched by its banks and then proceeded by the coach road to Grantville. At the store here we had to buy more buscnits to replace those which had been spoilt by the salt water. The store-keeper also filled our billies with fresh water; we had before watered the horse by the road-side. About half a mile out of the township we turned off the road into the bush and camped. The next day we continued along the coach road to Tooradin getting lunch by Tobin Yallock, the last fresh water creek we passed before Dandenong. The road lay first through forests of small timber, white gum prevailing; then large paddocks sown with clover which grew luxuriantly, covering the road on both sides of the track. This was especially the case at Caldermead, an estate on the left bank of Tobin Yallock. This estate evidently consists of a reclaimed swamp as could be seen by the deep drains and occasional clumps of tea

tree left in the hollows, but it had been reclaimed to some effect, the air was sweet with the smell of the clover, and there were large herds of fat cattle in the paddocks. After passing Caldermead we began to cross inlets from Westernport, running up into Kooweerup. The country became very flat covered with masses of dead tea-scrub. The last of these inlets was at Tooradin, where we camped for the night. We had come that day twenty-two miles. The next day we continued through Cranbourne to Dandenong, a distance of eighteen miles, where we left the horse, and returned by rail to Melbourne, the fifteenth day after we had left.

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## NOTES ON A TRIP TO THE CAVES NEAR CHUDLEIGH, TASMANIA.

By F. WISEWOULD.

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THESE Caves are situated on the Mole Creek at the foot of the mountains, near Chudleigh, Tasmania, about fifty miles from Launceston.

The easiest way to reach them is by rail to Deloraine, on the Western line, a distance of about forty miles, and thence by conveyance or horseback through Chudleigh, some ten miles further on, but if walking exercise is approved of, the walk from Deloraine is very pleasant and enjoyable.

The most comfortable way to see them is to appropriate one day to the journey to the foot of the mountains, camp there the night, or if camping out is not cared for, a farm-house is close at hand, where a coil up under cover can be obtained. At this place also you will obtain your guide to take you into the Caves next day.

The following day should then be appropriated to the Caves, and before starting, a careful change of all our clothing must be made, putting on any old garments which we have taken care to have with us, as we shall come out cold and wet through. We may then proceed to an inspection, but first, let us have some idea, if possible, of the locality.

In front of us, and almost in a semicircle, are the mountains, some distance up which is the source of the Mole Creek, (so called, I believe, because it runs some distance under the earth), which runs through the Caves, and which, shortly after starting disappears under the earth, making its appearance again at the mouth of the second Cave, it then runs about quarter of a mile between high banks and again disappears into the first Cave, runs across its mouth only again to disappear for nearly a mile, although during

this portion of its course there are many well-like holes in the ground, through which, if the ferns and undergrowth were cleared away we could see the creek rushing silently. After this, the creek again appears at a natural bridge, a beautiful spot to which our guide first takes us and where we first make our acquaintance with the creek.

This bridge consists of a large rock some ten or twelve feet in length, suspended on two walls of rock some fifteen feet high, over a pool of water, pure as crystal, with a fine yellowy-white, sandy bottom. To properly see the bridge, we must go down an almost perpendicular bank to the edge of the pool; here we find the creek bubbling up on the left hand side of the pool, swiftly running across it as if surprised at appearing so suddenly in the sunlight and disappearing under the wall of rock on the right, only to appear again some distance further on. The opposite side of the pool to that on which we descend slopes gradually up the hill side and is for many feet up covered with beautiful ferns of all sizes.

After having seen this we go on to the first Cave, taking care not to fall into any of the deep holes, across the bottom of which the creek runs. Having arrived at it, we find a pool of water guarding the entrance, of a depth unknown, and which appears black and gloomy in the deep shade of the rocky entrance, surrounded as it is with shrubs, while overhead, the staghorn and other ferns covering the rock almost seem to shut out the daylight. Towards this we descend, our guide telling us it is only about two feet deep, but we find on reaching the edge that we can get over it by some stepping stones at one end, and then we are in the first Cave, through which a branch of the creek runs all the way. This Cave is high, and in some places you can see the daylight streaming in through a man-hole far above your head on the top of the hill under which the Cave lies. The floor is black and slippery, with here and there beds of shingle; in other places it and the sides in the dim light appear to be black marble. At the far end and just before we reach the daylight again, we come to a sharp rise in the floor of the left hand side of the Cave, after ascending which we find ourselves met by a deep, dark hole, some distance down which, by the aid of our candles, we can just see the glimmer of water, the depth of which, our guide tells us, is very great, and that he has never yet been able to find the bottom of it, (perhaps he has never tried, and as we have no means of checking him, we must take it for granted that it is so.) We then retrace our steps (as it is easier to walk 100 yards underground than a quarter of a mile over a hill,) and proceed to the second Cave. The creek between the first and second Caves, a distance of nearly a quarter of a mile, runs between high banks covered with beautiful flowering shrubs, tree ferns, and many smaller sorts, and is open to daylight all the way.

The entrance to the second Cave cannot be seen from above, it is therefore necessary to go down the steep bank some thirty feet to the edge of the water, when we find ourselves opposite the Cave's entrance, it being across the creek. Here the water is only about one foot deep, running over a bright sand, and the pool in front of the entrance is almost surrounded by beautiful ferns, some many feet high. Now we see the necessity of having on our old clothing. We walk through the creek into the Cave, and are once more on dry ground, but only for a few minutes. The entrance is some ten feet wide, and about as many high, gradually increasing to about thirty feet, and having proceeded about twenty or thirty yards, we light our candles, as it gets very dark. A little further on, the roof suddenly descends to about ten feet, and the floor dips correspondingly about three feet into the creek, which here appearing from under the wall to our left rushes away into a hole on our right, running right across the Cave over a rough, rocky bottom. We made through this some six or seven yards, where some of the ladies and one or two of the gentlemen of our party come to grief over the slippery stones, and the water being between two or three feet deep, they are consequently wet nearly to the neck. After this, the Cave's roof suddenly rises to about fifty feet, and in one place opens right out on the hill side, where, far above us we can see a glimmer of sunshine, partly obscured by the fronds of a tree fern. The floor of the cave here is white, and in some places sparkling slightly, (a small piece of which I have with me,) and it maintains this character in many parts of the cave, but where the creek runs it is either shingle or yellow sand. After this we enter an almost circular chamber with a dome-shaped roof, the floor for the most part being dry, but round the side the creek runs and in one part is very deep. Proceeding further, the roof is very irregular, now so high that it is lost in black darkness, and again so low that it is almost necessary to creep on your hands and knees.

The stalactites, especially those over deep pools of water, and which cannot be touched are very beautiful, but the finest are high up and cannot be properly seen by the light of our candles. (One I have with me, but not very good.) After proceeding a little further on we meet the creek, again running straight down the cave and suddenly turning to the left disappears under the wall. We follow it up for 100 yards or so. At first we can walk upright, the water being up to our waists and intensely cold, but after 40 or 50 yards it shallows and is only up to our knees, but as the roof suddenly lowers and is only about four feet high, we must creep along with our faces in some places only a few inches above the surface of the water, in our attempts to avoid which we frequently suddenly raise our heads only to lower them quickly, having experienced that the roof is harder than our skulls, and here, and in

similar places to these, we envy those who have good hard hats to protect their heads. Having traversed this uncomfortable portion, we turn to the right into a high chamber, and on the corner of the wall as we turn we have some four feet from the ground the "Hanging Fleece," which is of a whitish yellow, is some feet in length, and is an almost perfect representation of a large fleece of wool.

Having passed through this chamber on dry ground, a few yards further on we come to another, and on the wall as we turn into it we have the "Organ Pipes," being six or eight large stalactites, if they may be so called, of some feet in length, representing the pipes of an organ, and which, when struck, have a clear ring, showing they are perfect and sound. From this on the stalactites disappear, the cave seeming to have been cut out of the soft yellow rock.

The floor now is very uneven, and suddenly rises some eight or ten feet, up which we clamber and find ourselves in a long narrow chamber of soft yellow rock known as the "Registry Office." Here on both sides are the names of those who have entered the cave, written in every imaginable style, from candle grease, downwards, thus giving the chamber its name. This gallery has a smooth floor, and is about four feet wide, fifty feet long, and twenty feet high. Under this there is another gallery of the same length, along which it is necessary to creep almost flat on your face, there being only room for one at a time to pass. The original floor of the cave after passing the registry office falls about seven feet into a chamber with a fine sandy floor and of a good height, and the cave pretty well keeps this character for the remainder of the distance we go, the creek sometimes crossing and sometimes running straight down the cave, until we come to a long chamber with sides sloping upwards, until they almost join in the centre, the walls being of a hard brown stone, and here as we are all nearly frozen in our lower limbs, we elect to stop, our guide telling us we have travelled nearly a mile but that if we like he will take us upwards of a mile further on, that being the distance he has explored, although the cave extends further even than that.

We now put out our candles and we can then realise that darkness which can be felt, and in it our voices seem unwilling to leave our close proximity, but even here we find life, for we see around us on the walls what look like very small glow-worms,\* shining out like miniature stars, and which seem to make the darkness more intense. Having re-lit our candles we retrace our steps as rapidly as possible to the entrance. On emerging from the cave we quickly make our

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\*Probably a fungous growth.

way for the camp, change completely, and take exercise to restore circulation.

I have been influenced to shortly sketch out this visit in the hope that others more scientific than myself may think it worth their while to afford time to explore these caves and report upon their resources (if any,) the caves and surroundings being such as would, I think, delight those following any branch of natural history.

Since my visit in January, 1882, I have heard that there is another cave some few miles further on, which far surpasses the ones I have tried to describe, as it has been almost untouched by visitors.

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## CORRESPONDENCE.

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### ATTEMPT TO REAR A CUCKOO.

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*(To the Editor of the "Victorian Naturalist.")*

DEAR SIR,

I have the pleasure to contribute the following information for the benefit of your valued and interesting journal.

About the 20th day of December, 1883, while mowing some common ferns or bracken which were growing unpleasantly near my orchard fence, being at that time of the year afraid of bush fires, my attention was arrested by hearing a young bird chirping, and on looking about I found that I had cut down some ferns in which was built a small nest, containing a single bird, which appeared to be decidedly large in comparison to the nest, and was in a nearly nude state, very plump and strong, not unlike a young dove, but somewhat smaller. I replaced the ferns as nearly as possible in their former position, and decided to make the acquaintance of its parents. After some little time, I was agreeably surprised at seeing a pair of small and insignificant brown birds, not unlike Larks, approach the nest. I at once concluded that all was not right, and was not a little interested.

A week passed, during which the nest was regularly attended, and the young bird had grown considerably and was fairly well-fledged. As Christmas was to be spent in Melbourne, I took leave of my interesting friends for a week, wishing them every success. On my return my first thought was the birds, which I found all well, the young bird being now covered with very distinct bands of dark grey and pure white feathers. Preparing a cage, I took the bird into safe keeping.

On showing to my neighbours and narrating my experience to them, they remarked it was very strange, but I maintained my opinion against all that I had got a real Victorian Cuckoo.

The bird thrived with me well, and was fed on meat and hard boiled egg, but though well cared for seemed to suffer much from the weather when it became cold, and in the month of June died, as I think from its effects.

I may remark that at the time of discovery I had no knowledge that there was such a bird known in this colony, and this, coupled with my friends' total ignorance in the matter, led me to take a very considerable amount of interest which I otherwise would not have done.

With best wishes I have the honour to remain,

Yours faithfully,

FLINDERS, WESTERNPORT,

J. S. SMITH.

*August 14th, 1885.*

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### ANECDOTE OF A DUCKLING.

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WHEN out fishing the other day, we heard the loud chirping of some bird, and presently spied a little black duckling swimming about in front of us. It seemed attracted by our voices and anxious to land. I tried imitating a duck's call. It was a very poor attempt, but much to our astonishment the little thing came and landed close to us. I made a clutch at it, but it slipped back into the water, and dived out of my hand. When up, it dived once more, and swam away for about fifty yards. I called again, when it turned and came straight back. I sat quite still, when the little creature landed, came round some tossacks and sat down beside me. I may mention that a black duck and four ducklings had been seen about an hour before, a little further down the river. She had evidently been alarmed and left this one behind. It seemed about a day old, but was wonderfully knowing for its age. We took it home, snugly tucked up. When taken out it refused to feed, but began preening its feathers, and then nestled in my hand. It caused much amusement next morning by following me about, tumbling out of its box, and off the table, and coming where it heard voices, round corners, over flower beds, and through borders. It is domesticated with a white duck and her family, has been with her now for ten days, and seems quite contented.

*6th Nov., 1884.*

J. A. H.





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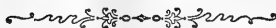
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**CONTENTS:**

|                                                                                              | PAGE |
|----------------------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                                   | 65   |
| Notes on a Basalt-Vitrophyr at Tanjil. By A. W. HOWITT, F.G.S. ... ..                        | 67   |
| Geological Sketch of S.W. Victoria. By J. DENNANT. ...                                       | 70   |
| Additions to the Queensland Flora by Dr. Lucas. By BARON VON MUELLER. ... ..                 | 74   |
| Notes on Victorian Fungs, with List of Species New to Victoria. By BARON VON MUELLER. ... .. | 76   |

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# Field Naturalists' Club of Victoria.

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

No Entrance Fee. Annual Subscription, including copy of proceedings 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

Copies of the Annual Report and List of Members for 1884-5, with Rules, etc., can be obtained on application to the Hon. Sec.

# Victorian Naturalist:

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## THE FIELD NATURALISTS' CLUB OF VICTORIA.

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THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 14th September, 1885.

The president, the Rev. J. J. Halley, occupied the chair, and about seventy-five members and visitors were present.

A letter was read from Dr. J. E. Taylor, F.G.S., thanking the Club for his election as an hon. member.

The hon. librarian acknowledged the receipt of the following donations to the Club's library:—

"Proceedings of the Royal Society of New South Wales" for 1884, vol. XVIII., from the Society; "Report of Smithsonian Institution," Washington, U.S.A., for 1882, from the U.S. Govt.

The hon. secretary read an account of the Club excursion to Cheltenham on the 12th inst., written by Mr. C. French, F.L.S. On account of the heavy rain in the morning, the excursion was only moderately attended. On arrival at Cheltenham, the members took a westerly direction towards Brighton. Several pools were tried for specimens of pond life, but nothing of importance was captured. The country was simply a blaze of bloom owing to the numerous *Leguminous* plants, such as *Acacias*, *Darviesias*, etc.; *Epacrids*; *Comesperma volubile*; and others. During the day over seventy species of plants were noted in bloom. Orchids were not abundant, being more frequent nearer the beach. On some low ground a splendid patch of the beautiful Epacrid, *Sprengelia incarnata* was seen. Insects were very scarce, doubtless owing to the early period of the season.

The following ladies and gentlemen were elected members of the Club:—Miss Millne, Mrs. Parker, Mrs. Wm. Bage, Messrs. W. Bage, Joseph Bryant, and E. H. Hennell.

Papers for future meetings were promised by Hon. Dr. Dobson, F.L.S., Messrs. O. A. Sayce, A. W. Coles, H. T. Tisdall, F.L.S., and H. Watts.

Papers read:—1. By Mr. H. Watts, on "Staining vegetable tissues for the microscope." The writer exhibited an enlarged drawing of a stained section, and described his experience in double staining.

2. The hon. secretary read a paper by the Rev. Dr. Woolls, F.L.S., entitled "Sanitary Properties of Eucalypts." The writer recommended eight species of Eucalypts which were likely to prove useful, where on account of climatic or geologic circumstances, *E. globulus* could not be grown.

3. The Rev. A. W. Cresswell read a paper by Mr. A. W. Howitt, F.G.S., entitled "Notes on a basalt-vitrophyr from River Tanjil valley, Gippsland." This was shown to be a glassy basalt from a volcanic formation, which had flowed over the bed of an ancient river, altering the gravel comprising the bed into a solid quartzose rock, locally termed "cement." Specimens of the rocks were exhibited and also sections under the microscope.

4. By Mr. F. Reader, "Notes on some hitherto unrecorded Victorian fungi," being a description of several species new to Victoria, collected by the writer in Studley Park, and elsewhere near Melbourne.

Baron F. von Mueller, K.C.M.G., F.R.S., forwarded as also applying to this colony an extract from the "Gardener's Chronicle" in which attention was called to the wholesale destruction of native plants in England, and recommending botanists, and members of field clubs to discountenance wholesale sales of native plants, and the removal of rare plants for cultivation without special objects.

Mr. C. A. Topp, M.A., read a note on a curious growth of fungi found by Mr. Tisdall in the Long Tunnel Mine, Walhalla, 800 feet below the surface.

The following were the principal exhibits of the evening:—By Rev. W. M. Alexander, 122 specimens of woods; by Mr. F. G. A. Barnard, native orchids in bloom, *Pterostylis curta*, *P. nana*, *P. nutans*, and *P. pedunculata*; also branches of native shrub *Myoporum insulare*, all grown by the exhibitor; by Miss F. M. Campbell, 100 species of Australian lichens; by Mr. A. Coles, two pheasants from Samoa, woodcock, and Canadian quail; by Mr. J. E. Dixon, rare Victorian beetle, *Natalis titana*, also mason wasp, and nest; by Mr. C. French, F.L.S., lepidoptera from Sumatra, the rare beetle, *Neolamprina Muellerei*, from North Queensland, also specimens of a destructive Australian moth *Agrotis vastator*, the larvæ of which feed on the roots of cereals; by Master C. French, album of dried orchids, genus *Pterostylis*; by Mr. J. T. Gillespie, twenty-six species of Victorian birds eggs; by Master Hill, orchid *Prasophyllum elatum*; by Mr. H. Hunt, a fan-tailed cuckoo, *Cacomantis flabelliformis*, (alive); by Mr. A. W. Howitt, F.G.S., hand specimens and sections for the microscope, of the rocks in

illustration of his paper; by Mr. H. Kennon, volcanic specimens from Mt. Noorat, also fossil shells from clay marl at lakes Bullenmerri and Gnotuk, Western District; by Master Lawrence, minerals; by Mr. D. Le Souëf, mummy head of Egyptian Queen from Thebes, about 4000 years old; by Mr. T. A. Forbes-Leith, a parrakeet, *Cyclopsittacus suarissimus* from New Guinea, being the smallest species but one known; by Mr. A. H. S. Lucas, M.A., lizard *Egernia* from near Saltwater River; by Mr. J. H. McKibbin, orchids in bloom, *Diuris longifolia*, *Pterostylis nana*, etc.; by Mr. F. Reader, fungi in illustration of his paper; by Mrs. Jno. Simson, cocoons, etc., of moth, apparently gregarious in its habits, on meyll branches from Deniliquin, N.S.W., also native cucumbers.

After the usual *conversazione* the meeting terminated.

## NOTES ON A BASALT-VITROPHYR AT TANJIL. By A. W. HOWITT, F.G.S.

I AM indebted to the courtesy of Mr. Graham, the mining manager of the "Tanjil Deep Leads Gold Mining Company," for the samples described in these notes. According to the information which he favoured me with, the No. 2 shaft of the mine was sunk through a volcanic flow, which had covered and preserved from erosion part of the course of a former river, of which perhaps the Tanjil is the modern representative.\*

In sinking the shaft, a tree trunk was found standing erect and enclosed in the rock from which the samples Nos. 1 and 2 were taken. Mr. Graham states that "it rested in a hollow in the clay, but without any sign of tap root, and the remaining branches and roots had a charred appearance." At 82 feet depth, cemented gravel was found, which is locally known as "cement" or "pudding stone," this was two feet thick, and it rested upon a few inches of water-worn gravel. Below this was the bed rock, probably of Upper Silurian age.

The sample of the rock through which the shaft was sunk, is a mixture of volcanic glass and fragments of crystalline rock. The glassy material which was very abundant in some samples, I found to be throughout greatly altered and decomposed, so that I had much difficulty in extracting sufficient material in an unaltered condition for analysis and examination. The alteration products are mostly carbonates of iron, manganese, lime and magnesia, which

\*I may refer the reader to particulars as to the Tanjil district given by Mr. Reginald A. F. Murray, in his valuable memoir on the "geology and mineral resources of South Western Gippsland." *Progress Report of the Geological Survey of Victoria*, part III, page 135.

fill in cavities or cluster along the fissures of the rock in botryoidal or mammillated groups.

The included fragments of crystalline rock vary from an almost compact to a vesicular texture, and in color from dark lead tint to almost black.

I examined three samples. The unaltered glass, one of the included fragments of rock, and the "cement." The following are the results of the examination:—

1. *Volcanic glass*.—It has a black color and a glassy lustre, with a peculiar wrinkled appearance on a fracture surface. A thin slice examined under the microscope proved to be in greater part a yellow isotropic glass, containing but few products of devitrification. In it are (a) very numerous, small, lath-like crystals of a triclinic felspar. Many of the crystals are imperfectly terminated, or the component plates are not of the same length. I could not obtain any reliable optical measurements, but the inclination of the plane of vibration is large, and suggests labradorite. (b.) Colorless angular grains or clusters of grains, which polarize in bright tints of green and red. Some few bear resemblance to colorless pyroxene, but I believe that all are olivine. Two groups showed traces of a rhombic prism, with angles very near those of olivine. The roughened surface appearance of the grains, the occasional occurrence of minute included octahedra of magnetite, and the decomposition of similar grains in another slice by hydrochloric acid confirm the conclusion. (c.) Magnetite, or perhaps titaniferous magnetite, occurs rarely. (d.) Finally, there are a few instances of alteration products which are most likely carbonate of iron, lime, &c.

In order to learn more as to the character of this rock, I made a quantitative chemical analysis, of which the subjoined are the results:—

|                                |       |                                |      |                   |        |
|--------------------------------|-------|--------------------------------|------|-------------------|--------|
| CO <sub>2</sub>                | ·88   | Fe <sub>2</sub> O <sub>3</sub> | 1·50 | K <sub>2</sub> O  | 2·26   |
| P <sub>2</sub> O <sub>5</sub>  | ·45   | Fe O                           | 7·32 | Na <sub>2</sub> O | 3·30   |
| Ti O <sub>2</sub>              | tr.   | Mn O                           | tr.  | H <sub>2</sub> O  | ·79    |
| Si O <sub>2</sub>              | 51·31 | Ca O                           | 8·74 |                   |        |
| Al <sub>2</sub> O <sub>3</sub> | 18·03 | Mg O                           | 5·60 |                   | 100·18 |

Moisture ·70

Sp. gr. 2·61

The microscopical examination shows that this rock is essentially glassy, and that it includes porphyritically crystals of olivine, plagioclase, and magnetite. These data, as also the quantitative analysis, agree best with a rock of the composition of tachylite, with which also the specific gravity falls in well.\*

\*Zirkel, *Lehrbuch der Petrographie*, p 304. I refer to the analysis by Gmelin of the Tachylite of Bobenhausen.



The term Tachylite has been used by Zirkel for a glassy modification of Basalt.\* Rosenbusch restricts it to those "more or less easily decomposable basic hyaline rocks which would have produced a Basalt had crystalline consolidation taken place." More lately† he has suggested that it will be well to use the word Vitrophyr for all volcanic rocks, which are mainly or wholly composed of glassy material. There would therefore be a Basalt-Vitrophyr and the name Tachylite might be added as indicating that sub-division to which the rocks, which are readily decomposed by Hydrochloric Acid, belong.‡

The sample which I have examined has the composition and structure of a hyaline example of Basalt, and according to the rules indicated by Rosenbusch, it can be described as a Basalt-Vitrophyr of the Tachylite sub-division.

2. *Crystalline rock.* This sample formed part of a rock fragment embedded in the Tachylite. I prepared a thin slice which I found to have many resemblances to that last described. The ground mass is composed of much dark-colored glass, which is made still more opaque by a great amount of black dust-like particles (magnetite?). In this are many lath-shaped compound triclinic feldspars and some irregular grains and clusters of grains of Olivine, and a few rare grains which may perhaps be a light-colored Augite. The vesicles of the rock are filled in with carbonates. Optical measurements which I obtained in some of the feldspars gave me results which, although not very satisfactory, allow it to be said that in the zone of  $P(001) - \infty \bar{P}\infty(100)$  the inclination of the angles of obscuration lie between  $70^\circ 30'$  and  $33^\circ 30'$ . One section which was near to the Brachypinacoid gave an angle of  $39^\circ 30'$ .

Such angles as these suggest a basic feldspar Labradorite or Bytownite series, but the angles taken as a whole do not agree with those of either one or the other, as given for instance in the researches of Schuster on the optical properties of the Plagioclastic feldspars.

This rock may be considered as being a fine grained somewhat vesicular Basalt, with a large amount of glass in its ground mass.

3. *Cement.* This sample was taken from part of the "cement" already spoken of. I found in examining a thin slice that it is composed of quartz sand, with a few larger fragments of what seems like vein quartz, and some black flecks which may be probably carbonaceous material. It has evidently been part of the river drift upon which it was found resting, and may have been altered to its present condition, at the time when the flow of Basaltic lava sealed up the course of the ancient river.

To sum up the preceding statements so far as relates to the Weeanie rock, through which the shaft of the Tanjil Deep Lead

Mine was sunk, I may say that it is a Basalt-Vitrophyr of the sub-division Tachylite, with included fragments of more crystalline lavas of the Basalt group.

\*Zirkel, *Mikroskopische Beschaffenheit der Mineralien und Gesteine*, p. 434.

†Rosenbusch, *Mikroskopische Physiographie der petrographisch wichtigen Mineralien* p. 137.

‡Rosenbusch, *Mikroskopische Physiographie der massigen Gesteine*, p. 445.

## GEOLOGICAL SKETCH OF SOUTH-WESTERN VICTORIA.

BY JOHN DENNANT.

### INTRODUCTION.

THE following outline of the geology of the south-western portion of Victoria, is the result of observations made while travelling through it for business purposes on various occasions.

The region described lies between these boundaries :—West, the South Australian border ; East, Norton's Creek, Serra Range, and a line drawn from Mount Abrupt to the Eumeralla mouth ; South, the coast line ; and North, the Mallee fringe.

A few preliminary notes are made on its physical geography.

The only mountain ranges are on the East, forming a part of the Grampians, and divided into the Dundas, Victoria, Serra, and Black ranges. A great number of volcanic hills of low elevation are found in the South, the principal being Napier, Rouse, Eccles, Clay, and Eckersley.

The river Glenelg rises on the western slopes of the Serra, and runs northwards and westwards between the Victoria and Black ranges, thence on past Balmoral and Harrow, when it bends to the South, and finally, after an exceedingly tortuous course, flows into the Southern Ocean, near the South Australian boundary. The scenery along its banks is of the most varied character, every geological formation in the district being cut through by it on its way to the sea.

Rising in sandstone country, it passes through granite at Harrow and Dergholm, slates at Roseneath, mesozoic strata at Casterton, pleistocene shell deposits at Pieracle, and miocene limestone at its mouth. The Wannon, which rises in the same range, but on the opposite or eastern slope, flows South and West around Mounts Abrupt, Sturgeon, and Victoria, past Dunkeld and Cavendish, and on through rolling downs of extreme fertility to its junction with the Glenelg at Sandford. The other principal tributaries of the

Glenelg are the Chetwynd, Wando, Stokes, and Crawford, all entering on its left bank, the country on its right furnishing no stream of any importance. The Surrey, Fitzroy, and Eumeralla, are small rivers, unconnected with this main drainage area, flowing directly into the ocean on the eastern side of Portland Bay.

In the region lying between the Glenelg and the Mallee Scrub, no river or even creek of any but the most insignificant size is found, as the country is almost a dead level, the slight slope which exists being towards the Murray. Here, however, are a number of small lakes, generally brackish, often full in winter, but sometimes for years together, perfectly dry. The principal are the White Lake, Booropki, Wallace, and Mitre Lakes.

The whole district is a deeply interesting one, comprehending as it does so many formations, ranging from pleistocene to silurian, with their accompanying intrusive and metamorphic rocks. A very large part of it is occupied by tertiary strata, particularly in the South and West, where marine limestones prevail, yielding an extensive and interesting suite of fossils, which, when fully collected and examined, will afford data for classifying these beds in the order of their deposition. Towards this end, much has already been done by a few earnest workers, but in a new country, where so many fresh forms are continually brought to light, the task is likely to engage the attention of geologists for a long time to come. At the present moment, a considerable diversity of opinion exists as to their relative age, the celebrated Muddy Creek deposits, for example, from which upwards of 300 species of mollusca are known, being placed by some authorities much lower down in the tertiary scale than they are by others. It is not possible to establish any equivalence of age for our tertiary beds with those in Europe and America, as the fossils, though presenting a generally similar facies, are seldom, if ever, identical, so that the terms miocene, oligocene, and eocene when applied to Australian strata must be understood to refer to their geological sequence only.

Professor Tate, of Adelaide, has devised a classification into Upper, Middle, and Lower Murravian, quoting the Muddy Creek beds in the first of these divisions, a position not quite in accordance with views held by Victorian geologists, but which he has advanced sound reasons for assigning to them.

Overlying many other formations, is a deposit of iron stone gravel, red in color, and of no great thickness anywhere, but most remarkable for its persistence through very wide areas. It forms a conspicuous feature in the landscape, extending over hill and dale, and coating every escarpment and cutting as far as the eye can reach. In the heath and scrub lands, it is hidden from view by another and still more recent deposit, namely, loose sand, which, spreading in broad belts throughout the counties of Follet and Lowan, and

occasionally in other parts, converts extensive tracts of country into barren sandy wastes. In the same region, numerous swamps and marshes occur, occupying every spot which lies at all below the general level. The difference of level, however, is but slight, as the swamps are very shallow, with rare exceptions becoming dry in summer. On the rising ground, the sand is covered either by a straggling forest of stringy bark and honeysuckle, or by great stretches of heath and ferns. It is usually supposed that this vast expanse of sand has been left by a retiring sea, but it will be shown in subsequent pages, that for the major part of it, this cannot be the case, and a totally different explanation of its origin will be proposed. In certain portions of Lowan, principally towards the Wimmera river, the sand is not quite so abundant as elsewhere, being replaced by beds of mud, while the swamps are represented by pools of brackish water; the surface however is still flat, and the landscape almost as tame and uninteresting as before.

The greatest variety of strata is met with in the area enclosed by the Glenelg and Wannon rivers, the chief of which are, upper palaeozoic in the centre and east, lower palaeozoic in the west, granite in the north, with mesozoic, metamorphic, basaltic and trap rocks in the south. Here the scenery is frequently bold and striking, and as might be expected among so many distinct formations of a diversified character, affording a pleasant contrast with the dreary monotony of the sandy plains adjoining.

After crossing the Wannon, the mesozoic strata continue for a short distance, when the miocene and other tertiaries commence, and extend in an unbroken series to the sea. Much of this region, however, is a basaltic plain, dotted over with numerous conical volcanic hills, each with a crater at its summit, from which flowed in recent geological times immense sheets of lava, traceable still as winding stony rivers for scores of miles over the face of the country. These igneous outbursts were the last event in the geological history of the province, and their influence in modifying its surface outlines is plainly visible.

The facts given in the succeeding pages may be relied on, as they have in every case been recorded from actual personal observation. Some of the theories propounded may possibly be challenged, but as the only desire is to arrive at the truth, it is hoped that they will provoke discussion, and lead in the end to sound views upon the geology of this neglected corner of Victoria. I should have preferred seeing the subject dealt with by abler hands, but in the absence of all other observers, I feel bound to do what I can to draw attention to such a promising field for geological enquiry.

It will be most convenient to treat of the various strata in an ascending order, beginning with the lowest, and proceeding upwards to the most recent, afterwards taking the eruptive and altered rocks,

and concluding with an account of the various ores and minerals found. As few departures from this order will be made as is consistent with clearness in the description of each formation.

**LOWER PALAEOZOIC.**—The beds which I now proceed to describe agree in lithological characters with silurian strata in other parts of the colony, but as up to the present no fossils have been found in them, it is not possible to determine with absolute certainty whether they should be so classed. Although they constitute the bed rock over a considerable area, they are visible on the surface in a few localities only, so that nothing but a superficial examination has been made, but with further research it is not improbable that fossil remains may yet be discovered. The strata are first noticed a few miles north of Casterton, and extend northwards to the Chetwynd river, eastward as far as Wando Dale, and westward to the banks of the Glenelg at Roseneath, and consist of soft earthy shales and slates of a greyish white or brown color, with tolerably perfect cleavage, standing either on edge, or showing a high dip. At Wando Dale, this was found to be about eighty degrees to New South Wales, giving a strike for the rocks there of N.N.W. to S.S.E., which is similar to that observed in silurian strata throughout Victoria. Bands of very hard quartzite occur at Brimboal, and the slaty beds are generally traversed by thin veins of quartz.

The best sections are seen on the banks of the Wando and Steep Bank rivers, and also at Roseneath, where the rocks are well exposed in a cutting made along the side of a hill for a roadway to the home station, which is itself built on the top of a slate hill. West of Roseneath, no strata of lower palaeozoic age are met with in the colony, nor indeed are they found again until the river Murray in South Australia is crossed, while east of Wando Dale, they first appear at Mount Stavely, sixty miles distant, so that this outcrop may be regarded as an isolated patch in Western Victoria.

In the contour of the surface, the region has one feature in common with Silurian areas generally, and that consists in its being often intersected by steep gullies, caused, not only by the high dip of the slates, but also by their friable nature allowing the winter torrents to cut deeper and deeper channels through them. The Steep Bank Rivulet is so named from the characteristic abruptness of its banks. Many an old miner, struck by the resemblance of this country to the gold mining districts, has searched in the sands of the streams mentioned for gold, and if report speaks truly, with the result of at least finding the "color." A small nugget, said to have come from the Wando, was lately given to the writer by an old resident on that river, who was most circumstantial in accounts of both himself and others having found gold at various times in the neighbourhood.

At one locality, Nolan's Creek, a vein of quartz contains copper pyrites, but not in sufficient quantity to pay for the working.

In the sands of the Wando, minute rubies are abundant, and the quartz bands occasionally enclose good sized pieces of tourmaline.

The remains of igneous outbursts exist here and there amongst the sedimentary strata, but on so small a scale that they might easily escape observation. Sometimes they are from recent basaltic overflows, and then the decomposed rock and ashes make a fertile soil, though of limited extent. At the Chetwynd, the bounding slaty rocks are highly metamorphosed, and thus converted into a brittle, dark-colored rock, crossed by regular bands of a lighter color, the characteristic cleavage being destroyed. At a quarry here, opened for the purpose of obtaining road metal, offshoots from the basaltic dyke are intercalated amongst this banded rock, which they have pushed both upwards and downwards, forcing it in some places to assume a horizontal position and in others to dip at varying angles. The workmen are obliged to excavate both rocks in cutting into the hill, but they are careful to separate the brittle and less useful one from the bluestone, which they are mainly in search of. The separation is easy enough, as both rocks run in well marked veins of varying width. In other localities, junctions of similar strata occur, without any metamorphosing effect being produced, as at Wando Dale, where a basaltic dyke is found in immediate contact with unaltered slates.

At the Wando Gorge, there are two singular hills of igneous origin, one on each side of the Wando, and the passage between is so narrow, that the passing traveller might well wonder what had become of the river, until on approaching, he finds that it runs in a channel between these two hills, of only a few yards in width. They were no doubt originally swelling mounds, connected at their base, but now cut through by the river Wando, which thus finds an outlet to the Glenelg, into which it flows. The hills are in a line with a low schistose range, locally known as "The Hummocks," extending from near Casterton to the table land at Brimboal.

*(To be continued.)*

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#### ADDITIONS TO THE QUEENSLAND FLORA BY DR. LUCAS.

RECORDED BY BARON VON MUELLER, K.C.M.G., M.D., F.R.S.

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DURING a recent visit to Northern Queensland Dr. T. P. Lucas, one of the most accomplished and zealous members of the Victorian Field Naturalists' Club, while seeking restoration of his health from

the humid mild tropical air, formed not only entomological collections of great interest, but enriched also our knowledge of the vegetation there by bringing from thence many rare plants, one of which as new I beg to define diagnostically.

*Lepistemon Lucae.*

Branchlets and leafstalks beset with appressed hair; leaves hastate, gradually narrowed into an acute apex, the sinus narrow, the lobes ending into a rather acute sometimes excised angle; both pages of the leaves beset with appressed hair, the lower more so than the upper; cymes almost forming umbels; stalklets during anthesis about as long as the stalks, shorter than the flowers, appressed-hairy; sepals ovate-orbicular, minute, many times shorter than the corolla; the lobes of the latter extremely short; anthers hastate-ovate; stigma didymous; ovary and crenulated annular disk glabrous.

Between Endeavour-river and Port Douglas.

In its very small and blunt sepals this species approaches *L. urceolatus*, but the form of the leaves is quite different; the fruit also is likely to exhibit further distinctive characteristics, but remains as yet unknown. That of *L. urceolatus*, according to specimens from near Cooktown, collected by Mr. W. Persieh, forms a depressed-globular and somewhat quadrangular capsule, measuring  $\frac{1}{3}$  to nearly  $\frac{1}{2}$  an inch in width; it is glabrous and shining, bursts rather irregularly and slowly, and contains four seeds, which are about  $\frac{1}{8}$  of an inch long and broad, imperfectly silky. Mr. Barnard found the same species on Mossman's River.

*Meniscium triphyllum.*

Swartz, *syn. jil.* 19 et 206.

Daintree River.

This fern, brought by Dr. Lucas, adds a new one to the Flora of Australia, in which indeed the genus was neither found to be represented before. In 1864 (*fragm. phytogr. Austr.* iv, 166) I alluded already to some affinity of this fern to *Polypodium urophyllum* through *Meniscium cuspidatum*; the two latter seem however to be also quite distinct from each other. Dr. Lucas found *M. triphyllum* growing along with *P. urophyllum*. The secondary vein, which constitutes the boundary between the two rows of areoles, interjacent to the primary veins, may on the same pinna be perfect, or may be more or less broken up by not reaching the transverse veinlet of the next areole, in that case mostly ending in a club-shaped apex; this interruption of the secondary veins occurs exceptionally in *P. urophyllum* also, while according to Blume's illustration it seems of common occurrence in *M. cuspidatum*.

The following are the rarer plants, obtained by Dr. Lucas in the same region:

*Mollineda longipes*, (2) F. v. M.; *Capparis nobilis*, (2) F. v. M.; *Pittosporum rubiginosum*, (4) Cunn.; *Polygala leptalea*, (1) Cand.;

*Hugonia Jenkinsii*, (1) F. v. M.; *Urena lobata*, (3) L.; *Tragia Novæ Hollandiæ*, (1) J. M.; *Harpullia alata*, (4) F. v. M.; *Celosia aristata*, (1) L. (the wild form with conically attenuated slightly copper-coloured spikes, assumed to be indigenous, thus adding even a new genus to the Flora of Australia); *Salicornia cinerea*, (1) F. v. M. (with spikes  $1\frac{1}{2}$  inches long); *Crotalaria calycina*, (1) Schrank; *Indigofera pratensis*, (1) F. v. M.; *Tephrosia reticulata*, (1) Benth.; *Aeschynomene Americana*, (1) L.; *Kennedya retusa*, (4) F. v. M.; *Cajanus reticulatus*, (5) F. v. M.; *Callistemon lanceolatus*, (3) Cand.; *Osbeckia Chinensis*, (3) L.; *Loranthus signatus*, F. v. M.; *Helicia ferruginea* (3) F. v. M. (a variety with almost sessile less denticulated leaves and with less hairy flowers); *Oldenlandia galiodes*, (1) F. v. M.; *Emelia purpurea*, (1) Cassini; *Ipomœa eriocarpa* (2) R. Br.; *Nelsonia campestris*, (1) R. Br.; *Tournefortia sarmentosa*, (3) Lam.; *Plectranthus longicornis*, (1) F. v. M.; *Hydrilla verticillata*, (1) Casp.; *Schelhamnera multiflora*, R. Br.; *Tricoryne anceps*, (1) R. Br.; *Floriscopa scandens* (3) Lour.; *Ectrosia Gulliveri*, (1) F. v. M.; *Selaginella flabellata*, (3) Spring; *Selaginella concinna* (3) Spring; *Lindsaya lanuginosa*, (4) Wall.; *Adiantum lunulatum*, (1) Burm.; *Adiantum diaphanum*, (3) Bl.; *Pteris geraniifolia*, (1) Raddi; *Pteris marginata*, Bory; *Pteris quadriaurita*, Retz; *Aspidium uliginosum*, (3) Kunze; *Polypodium phymatodes*, L.

---

1 Cooktown.    2 Port Douglas.    3 Daintree River.    4 Mossman River.  
5 Cape York Peninsular.

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## NOTES ON VICTORIAN FUNGS.

BY BARON VON MUELLER, K.C.M.G., M.D., Ph.D., F.R.S.

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IN the eleventh volume of the *fragmenta phytographiæ Australiæ* four years ago a list was given much from the manuscripts of Dr. M. C. Cooke, the celebrated mycologist, of all the fungi then known from Australia; this enumeration contained 770 species, including the 275 recorded for Tasmania by the Rev. M. J. Berkeley, the greatest living specialist in this branch of knowledge. The rev. gentlemen had also extensive collections of fungi from the botanic department of Melbourne successively since 1853, largely brought together by myself, but a considerable portion also furnished by correspondents, who were animated by me to institute observations locally in this direction. The first list of fungaceous species thus arose for Eastern Continental Australia in 1873, giving the specific



names of 235; but, Berkeley had enumerated already in 1845 for Western Australia 120 species, and the great Elias Fries, in 1846 recorded from the same region 42. Failing strength obliged the Rev. Mr. Berkeley, to withdraw at a venerable age from the field of mycology, on which he had shed so much light for half a century; thus all my later collections went to the distinguished Dr. M. C. Cooke, except some particular kinds, which the last mentioned great mycologist submitted to the Rev. C. Kalchbrenner. I was able to insert also in the list elaborated for the fragmenta many more species, obtained partly by Mr. F. M. Bailey in Queensland (examined by Berkeley and Broome conjointly,) partly brought together by myself from various contributors, whose names I have recorded then. This brought the list for the fragmenta in 1881 up to 1179 species. It was my intention, to publish the additions made since then by my friends and myself (from determinations, kindly undertaken by Dr. Cooke) in the 12th volume of the fragmenta; but as latterly many extra-engagements arose in the department for the exhibitions in Amsterdam, Calcutta and London, for the completion of the *Eucalyptography*, for the geographic and literary census of Australian vascular plants (8738 up to 1884,) for the illustrated monography of Myoporinæ, for two new editions and two translations of the volume on "Select Plants for Industrial Culture and Naturalisation" and now also for the key to the system of Victorian plants (needing about 7500 entries and 200 wood-cuts,) I found it impossible to continue meanwhile the fragmenta, although the descriptions of about 150 new vascular species and numerous other notes accumulated for it already. But Dr. Cooke has issued in the 10th and 11th volume of the *Grevillea* an enumeration of all fungi from Australia known to him up to 1883, by which means the total was advanced to the number of 1241. Reasons have arisen, to withhold no longer from publication the list of those fungi, at least which came as new for Victoria from myself to Dr. Cooke since 1881; and I now avail myself of the kind offer of the Editor, to have it printed for the October number of the "Victorian Naturalist;" and I hope to follow this up in the next number, by an enumeration of all species of fungaceous plants rendered known through Dr. Cooke from my Department as new for Australia during the last four years, the number being very considerable. Mere new geographic annotations must be reserved for later publication. To those not initiated in mycologic studies I would like to point out the desirability of sending Australian fungi to specialists through any great phytologic institution, so as to avoid clashing of various professional observers' studying of similar material. That now-a-days each great class of evascular plants needs special investigators will be comprehended, when I say, that Dr. Streinz enumerated in 1862 already 11014 fungaceous plants specifically, irrespective of an extensive supplement

issued the same year, and of course not counting over 50000 synonyms then furnished by him also.

The descriptions given by Dr. Saccardo merely of the tribe of *Pyrenomyces* (not one of the largest group of fungi) from 1882-1883 occupy not less than 1648 large-octavo pages irrespective of indices. Indeed we find now-a-days, when evascular plants from all parts of the globe require to be connectedly investigated, when very slight differences are deemed sufficient for specific demarcation, and when repetitive resemblances among these forms of vegetable life have been shown to be often widely dispersed, that the mycologist can no longer work even with real advantage on Algs, or Lichens, or Mosses, each of which now extensive group requiring not only a particular devotee, but also a life-long study of that particular field, over which for progressive reliable work, proportionate to the sacrifice of time, the command is to be exercised.

### LIST OF FUNGACEOUS PLANTS,

*Obtained by the Botanic Department of Melbourne from 1882 to 1884 as New for Victoria.*

Compiled from successive records furnished by

DR. M. C. COOKE, M.A.

- Agaricus clypeolarius*, Bulliard (*Lepiota*)  
 „ *melleus*, Vahl (*Armillaria*)  
 „ *ditopus*, Fries (*Clitocybe*)  
 „ *infundibuliformis*, Fries, „  
 „ *radicatus*, Relhan (*Collybia*)  
 „ *nivosulus*, Berkeley, „  
 „ *trachycephalus*, F. v. M. and Kalch. (*Mycena*)  
 „ *galericulatus*, Scopoli „  
 „ *luteo-albus*, Fries „  
 „ *polygrammus*, Fries „  
 „ *umbelliferus*, Linné (*Omphalia*)  
 „ *Aethiops*, Fries (*Leptonia*)  
 „ *atro-caruleus*, Fries (*Pleurotus*)  
 „ *applicatus*, Batsch „  
 „ *caryophyllus*, Berkeley „  
 „ *mutabilis*, Schaeffer (*Pholiota*)  
 „ *peregrinus*, Fries (*Flammula*)  
 „ *picreus*, Fries „  
 „ *spumosus*, Fries „  
 „ *conspersus*, Fries (*Naucoria*)  
 „ *subglobosus*, Fries „  
 „ *pactolus*, Cooke (*Crepidotus*)  
 „ *fascicularis*, Hudson (*Hypholoma*)  
 „ *ericæus*, Persoon (*Psilocybe*)

- Agaricus fimiputris*, Fries (*Panceolus*)  
 „ *disseminatus*, Persoon (*Psathyrella*)  
*Paxillus hirtulus*, F. v. Mueller.  
*Hygrophorus nigricans*, Berkeley.  
*Marasmius calobates*, Kalchbrenner.  
*Panus ruscidulus*, Berkeley and Broome.  
*Panus virulosus*, Berkeley.  
*Xerotus papyraceus*, Berkeley.  
*Lenzites betulina*, Fries.  
*Polyporus anthracophilus*, Cooke.  
 „ *atro-rinosus*, Cooke.  
 „ *australis*, Fries.  
 „ *borealis*, Fries.  
 „ *campylus*, Fries.  
 „ *fragilis*, Fries.  
 „ *illotus*, Kalchbrenner.  
 „ *lactus*, Cooke.  
 „ *lignosus*, Klotzsch.  
 „ *marginatus*, Fries.  
 „ *ochroleucus*, Berkeley.  
 „ *pelliculosus*, Berkeley.  
 „ *pisiformis*, Kalchbrenner.  
 „ *proteus*, Kalchbrenner.  
 „ *proteoporus*, Cooke.  
 „ *seriatus*, Kalchbrenner.  
 „ *spiculiferus*, Cooke.  
 „ *tardus*, Berkeley.  
 „ *trizonatus*, Cooke.  
 „ *rarius*, Fries.  
 „ *Weinmanni*, Fries.  
*Hydnum cirrhatum*, Fries.  
*Irpex flarus*, Klotzsch.  
*Grandinia Australis*, Berkeley.  
*Thelephora pedicellata*, Schweinitz.  
*Hymenochaeta purpurea*, Cooke.  
*Clavaria rugosa*, Bulliard.  
 „ *cristata*, Holmskiöld.  
 „ *corallioides*, Linné.  
*Calocera stricta*, Fries.  
*Tremella albida*, Hudson.  
*Hirneola polytricha*, Fries.  
*Dacrymyces deliquescens*, Duby.  
 „ *stellatus*, Fries.  
*Podaxon pistillare*, Fries.  
*Mesophellia arenaria*, Berkeley.  
 „ *ingratissima*, Berkeley.

- Geaster floriformis*, Vittadini.  
*Lycoperdon pusillum*, Batsch,  
     „ *coelatum*, Fries.  
*Polysaccum pisocarpum*, Fries.  
*Cyathus desertorum*, F. v. Mueller.  
     „ *fimicola*, Berkeley.  
*Spumaria alba*, Fries.  
*Didymium farinaceum*, Fries.  
*Stemonitis fusca*, Roth.  
*Aecidium microstomum*, Berkeley.  
     „ *Lagenophoræ*, Cooke.  
     „ *Prenanthis*, Linné.  
*Uredo bulbipes*, Kalchbrenner.  
     „ *Cichoracearum*, Candolle.  
*Puccinia Lagenophoræ*, Cooke.  
     „ *Prunorum*, Cooke.  
*Ustilago carbo*, Tulasne.  
     „ *digitariæ*, Rabenhorst.  
*Podosporium grande*, Cooke.  
*Sporidesmium atro-fuscum*, Cooke.  
*Penicillium candidum*, Cooke.  
*Antennularia scoriadea*, Berkeley.  
     „ *Robinsoni*, M. and Berkeley.  
*Geoglossum Muelleri*, Berkeley.  
*Peziza fusipora*, Berkeley.  
     „ *vesiculosa*, Fries.  
     „ *apiculata*, Cooke.  
     „ *applanata*, Fries.  
*Asterina Rosæ*, Fries.  
*Nectria ferruginea*, Cooke.

The 101 fungi, enumerated on this occasion, bring up the number for Victoria to 340 ; those added in 1885 through the exertions of the writer will be published early next year, when probably likewise the very large number of Mosses, Lichens and Algs, accumulated during the few last years as new for the central Australian colonies, can connectedly be recorded together with the many additional fungi obtained from beyond Victoria. That for years to come much novelty will be discovered yet particularly among Australian fungi, cannot be doubted, when we consider, how much they depend for their development on favourable seasons, how capriciously many of these kinds of plants do make their appearance, and how local many of the species anyhow are in their occurrence,—not to speak of the need of microscopic search for the minutest of these memorable organisms, even if new vegetable immigrations were not constantly adding to the fungus-flora also.



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# Victorian Naturalist:

THE JOURNAL AND MAGAZINE

OF THE

**Field Naturalists' Club of Victoria**

The Author of each article is responsible for the facts and opinions he records.

## CONTENTS:

|                                                                                                  | PAGE |
|--------------------------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                                       | 81   |
| On the Sanitary Properties of Eucalypts. By REV. W. WOOLLS, Ph.D., F.L.S. ... ..                 | 84   |
| To Wilson's Promontory Overland. By J. B. GREGORY, LL.M., and A. H. S. LUCAS, M.A. (Part 3.) ... | 87   |
| Notes on the Habits of Native Birds. Part 1, Crows. By I. BATEY. ... ..                          | 90   |
| CORRESPONDENCE ... ..                                                                            | 92   |
| ERRATA ... ..                                                                                    | 92   |

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

No Entrance Fee. Annual Subscription, including copy of proceedings 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

Copies of the Annual Report and List of Members for 1884-5, with Rules, &c., can be obtained on application to the Hon. Sec.



THE

# Victorian Naturalist:

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No. 23

## THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 12th October, 1885.

Mr. A. H. S. Lucas, M.A., vice-president, occupied the chair, and about ninety-five members and visitors were present.

The hon. secretary reported that two excursions had taken place since the last meeting. The excursion to Cheltenham on 24th September, was attended by about twenty members, who had a most enjoyable outing. Among other plants noted was a fine patch of the orchid, *Lyperanthus nigricans*, in bloom. A fine specimen of the blue-tongued lizard, *Cyclodus gigas*, was captured. The excursion to Ringwood on the 10th inst., was poorly attended owing to the threatening weather, and had to be soon abandoned on account of heavy rain setting in. However fine specimens of the bladder-wort, *Utricularia dichotoma*, and also of an allied plant, *Polypompholyx tenella*, were secured, and the occurrence of the orchid, *Caladenia suaveolens*, was noted.

The following gentlemen were elected members of the Club:—Messrs A. C. Curlewis, W. M. Gamble, and J. Pickering.

Mr. E. D. Atkinson, C.E., Table Cape, Tasmania, was elected an honorary member.

Papers read:—By Mr. O. A. Sayce, "Remarks on Victorian gall-making *Coccidæ*." The author gave the results of his observations on the life histories of several species of scale-insects, belonging to the order *Homoptera*, which cause the numerous galls found on the young Eucalyptus trees. His remarks were well illustrated by drawings, and by slides for examination under the microscope.

The exhibits of the evening consisted for the most part of wild flowers, a detailed description of which is given below.

After the usual *conversazione* the meeting terminated.

## EXHIBITION OF WILD FLOWERS.

THE last annual report of the Field Naturalists' Club contained a paragraph suggesting the holding of an exhibition of wild flowers. Accordingly in response to the request of the committee exhibits of wild flowers was made the special feature of the last meeting of the Club. About 150 species of wild plants in bloom were shown. The exhibits were arranged in the ordinary show stands, and in most cases had their botanical names, together with those of the natural orders attached. The number of exhibits and exhibitors was hardly so large as might have been expected, but this was, to a great extent, attributable to the weather, the two previous days having been so wet and boisterous as to render field work most unpleasant even to the greatest enthusiast. The attendance of members and visitors was very good, and bearing in mind the great difficulty experienced in keeping our native flowers fresh when cut, the exhibition may be considered a great success, and should induce the committee to set apart, during next season, an evening specially for the wild-flower exhibition. With a little effort on the part of the members to obtain flowers from distant parts of the colony, the evening may be made one of the most interesting and instructive gatherings of the Club.

One of the most noticeable exhibits was that of Mr. G. Coghill, who showed about eighty-five varieties of native flowers from Donald, Box Hill, Dandenong Ranges, etc., among which were *Grevilleas*, *Swainsonias*, etc., and about twenty-five species of orchids including *Chiloglottis Gunnii*, *Caladenia suaveolens*, *Pterostylis nutica*, etc. Mr. C. French, F.L.S., showed about sixty species from Caulfield, etc., among which were fine specimens of the orchids *Lyperanthus nigricans*, *Prasophyllum elatum*, etc. Mr. F. G. A. Barnard, exhibited about fifty species from Doncaster, Ringwood, and Caulfield, including the bladder-wort, *Utricularia dichotoma*, and the orchids *Calochilus campestris*, *Pterostylis barbata*, *P. pedunculata*; also the following growing Victorian ferns, *Adiantum æthiopicum*, *Lomaria fluriantilis*, *L. lanceolata*, *Woodwardia caudata* and *Aspidium Capense*. Mr. J. E. Dixon, exhibited about twelve species of orchids in pots, including *Caladenia latifolia*, *C. Menziesii* and *Pterostylis cucullata*. Mr. J. McKibbin, orchid *Lyperanthus nigricans*, grown by exhibitor. Smaller but interesting exhibits were shown by Miss Campbell, Miss Halley, Messrs Bage, Best, Hill, Topp, and Watts. Mr. T. A. Forbes-Leith exhibited a collection of dried ferns from Mt. Blackwood; Mrs. J. Simson, cut flowers of the Waratah (*Telopea speciosissima*), from New South Wales; Dr. Lucas, a fern *Meniscium triphyllum*, new to Australia, from Queensland; Mr. C. Jesse, water-colour drawings of native

flowers; Mr. H. Watts, rare marine algæ from Port Phillip and Western Port Bays, dredged by Mr. J. Bracebridge Wilson.

The following list of the principal flowers exhibited, is arranged according to Baron F. von Mueller's Census of Australian plants:—

| NATURAL ORDER. | GENUS AND SPECIES.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ranunculaceæ   | <i>Clematis aristata</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dilleniaceæ    | <i>Hibbertia densiflora</i> , <i>H. fasciculata</i> , <i>H. stricta</i> .                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Violaceæ       | <i>Viola betonicifolia</i> , <i>V. hederacea</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pittosporæ     | <i>Billardiera scandens</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Droseraceæ     | <i>Drosera auriculata</i> , <i>D. peltata</i> , <i>D. Menziesii</i> ,<br><i>D. Whittakerii</i> , <i>D. glanduligera</i> .                                                                                                                                                                                                                                                                                                                                                                   |
| Polygalæ       | <i>Comesperma ericinum</i> , <i>C. volubile</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Tremandrea     | <i>Tetratheca ciliata</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Rutaceæ        | <i>Correa speciosa</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Euphorbiaceæ   | <i>Ricinocarpus pinifolius</i> ; <i>Amperea spartioides</i> .                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Casuarineæ     | <i>Casuarina distyla</i> (male flowering branch.)                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Stackhousiæ    | <i>Stackhousia linarifolia</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Amarantaceæ    | <i>Ptilotus spathulatus</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Ficoideæ       | <i>Mesembrianthemum aquilaterale</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Leguminosæ     | <i>Daviesia corymbosa</i> ; <i>D. latifolia</i> ; <i>D. ulicina</i> .<br><i>Aotus villosa</i> . <i>Pultenæa paleacea</i> ; <i>P. obcordata</i> ?<br><i>Dillwynia cinerascens</i> . <i>Platylobium obtusangulum</i> .<br><i>Bossia cinerea</i> . <i>Goodia lotifolia</i> . <i>Swainsonia</i><br><i>procumbens</i> ; <i>S. sp.</i> <i>Kennedya prostrata</i> ; <i>K.</i><br><i>monophylla</i> . <i>Indigofera Australis</i> . <i>Acacia suave-</i><br><i>olens</i> ; <i>A. verticillata</i> . |
| Myrtaceæ       | <i>Leptospermum lævigatum</i> ; <i>L. myrsinoides</i> . <i>Mela-</i><br><i>leuca ericifolia</i> . <i>Eucalyptus sp.</i>                                                                                                                                                                                                                                                                                                                                                                     |
| Rhamnaceæ      | <i>Cryptandra parvifolia</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Loranthaceæ    | <i>Loranthus sp.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Proteaceæ      | <i>Isopogon asper</i> . <i>Grevillea alpina</i> ; <i>G. ericifolia</i> .<br><i>Banksia marginata</i> .                                                                                                                                                                                                                                                                                                                                                                                      |
| Thymeleæ       | <i>Pimelea octophylla</i> ; <i>P. curviflora</i> ; <i>P. humilis</i> ;<br><i>P. phyllicoides</i> ; <i>P. axiflora</i> .                                                                                                                                                                                                                                                                                                                                                                     |
| Compositæ      | <i>Brachycome cardiocarpa</i> . <i>Aster pannosus</i> ; <i>A.</i><br><i>stellulatus</i> . <i>Leptorrhynchus squamatus</i> . <i>Helipterum</i><br><i>Cotula</i> . <i>Helichrysum scorpioides</i> ; <i>H. apiculatum</i> .<br><i>Microseris Forsteri</i> . <i>Craspedia Richea</i> . <i>Senecio</i><br><i>sp.</i>                                                                                                                                                                             |
| Campanulaceæ   | <i>Wahlenbergia gracilis</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Candolleaceæ   | <i>Candollea graminifolia</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Goodeniaceæ    | <i>Brunonia australis</i> . <i>Goodenia geniculata</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Solanaceæ      | <i>Solanum aviculare</i> . <i>Nicotiana suaveolens</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Scrophularinæ  | <i>Euphrasia Brownii</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Lentibularinæ  | <i>Utricularia dichotoma</i> . <i>Polypompholyx tenella</i>                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Asperifoliæ | <i>Cynoglossum suaveolens.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Myoporinæ   | <i>Myoporum serratum.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Epacridæ    | <i>Styphelia virgata; S. Richei. Epacris impressa; E. obtusifolia,</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Orchideæ    | <i>Thelymitra ixioïdes; T. aristata; T. longifolia; T. carnea; T. flexusa; T. antennifera. Diuris palustris; D. maculata; D. pedunculata; D. sulphurea; D. longifolia. Calochilus campestris. Prasophyllum flavum; P. elatum; P. fuscum; P. species. Microtis atrata. Pterostylis curta; P. nutans; P. pedunculata; P. cucullata; P. barbata; P. mutica; P. longifolia. Lyperanthus nigricans. Caladenia Menziesii; C. Patersoni (two varieties); C. latifolia; C. suaveolens; C. carnea (three varieties). Chiloglottis Gunnii. Glossodia major.</i> |
| Liliaceæ    | <i>Burchardia umbellata. Dianella longifolia. Bulbine bulbosa. Chamæscilla corymbosa. Arthropodium strictum. Xerotes Thumbergii. Xanthorrhæa minor.</i>                                                                                                                                                                                                                                                                                                                                                                                               |
| Restiaceæ   | <i>Calostrophus fastigiatus.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## ON THE SANITARY PROPERTIES OF EUCALYPTS.

By REV. W. WOOLLS, Ph.D., F.L.S., HON. MEMBER F.N.C.

Read before the Field Naturalists' Club of Victoria, Sept. 14th, 1885

FROM careful observations which have been made for some years past, it has been found that some species of our Eucalypts have wonderful powers of absorption, and that *E. Globulus*, in particular, has the property of mitigating the influences of malaria. A writer in an English periodical gives it as his opinion that a large Eucalypt will dispose of a vast amount of house sewage, and thus prevent the development of typhoid fever and other diseases which are supposed to arise from imperfection of drainage and impurity of atmosphere. The same writer, however, adds by way of caution, that such trees should be kept far away from good wells, "as the insatiable thirst of these vegetable monsters (Eucalypts)" has a tendency to dry up the sources of supply. He mentions as a fact that the owner of Bay Island Farm, Alameda County, recently found a curious root formation of an Eucalypt in the bottom of his well, about sixteen feet below the surface, though the tree to which the roots belonged stood fifty feet from the well. This he regarded as an excellent illustration of the way in which an Eucalypt absorbs moisture, "its roots going so far as to find water, pushing themselves through a

brick wall, and then developing enormously after the water is reached."

*E. globulus* is the species referred to by European and American writers, as being the best-known and most highly-appreciated of the genus; but as that species, though suitable for some climates and surpassing many species in the rapidity of its growth, does not extend beyond the south part of New South Wales, nor when planted in the neighbourhood of Sydney does it appear to flourish and attain longevity, it is well to bear in mind that besides *E. Globulus* there are other Eucalypts, which occur naturally in a more northerly latitude and under different climatic and geologic circumstances, and that these species, while possessing properties very similar to those of *E. Globulus*, may thrive where that species does not. The species to which I would refer, as calculated to promote in a greater or less degree the advantages resulting from the planting of Eucalyptus-forests in marshy and unhealthy places, are the following:—

1. *E. robusta*, or "the Swamp Mahogany," a fine tree rising to 100 feet or more with a proportionate girth. This tree has larger fruit and flowers than most of the Eastern species, and the leaves are broad and long, especially when growing in wet or damp localities. In the early days of the colony, this was one of the first Eucalypts which attracted the notice of botanical collectors, and though the larger trees have long since succumbed to the woodmen, fair specimens of it may be seen in the neighbourhood of Sydney and Parramatta, and here and there on the low lands near the Hawkesbury. Independently of its useful properties, it is one of our finest Eucalypts, and its foliage may be regarded as umbrageous.

2. *E. largiflorens*, "the Bastard Box," or "Swamp Gum." It occurs for the most part in marshy places, has a profusion of flowers in the season, and whilst the younger trees resemble the common Box, *E. hemiphloia*, the large ones approach some forms of the Grey Gum, *E. tereticornis* but they may easily be distinguished by the enclosed valves of the fruit and the very divergent veins of the leaves. Baron F. von Mueller connects this tree with the Stunted Box of the interior. The typical species attains considerable size, and the wood when dry is hard and tough.

3. *E. longifolia*, known as "Woolly Butt," which has the flowers usually in threes, and the fruits larger than most of those belonging to the Eastern species. The bark is persistent (although sometimes it falls off from old trees,) and the leaves when growing near water are frequently a foot in length and contain a great deal of volatile oil.

4. *E. saligna*, "Flooded or Blue Gum," one of the Gums first described from Port Jackson (1795.) This is a smooth barked and fine tree, occurring generally in gullies or the mountains, or on the

banks of rivers or creeks, rapid in growth, and like the preceding attaining a height of 100 feet or more, but differing from it in growing almost exclusively near water.

5. *E. radiata*, a variety of *E. amygdalina* (F. v. M.,) called "River White Gum." This is a tree of moderate size, found only on the banks of rivers or creeks, having the bark depending in long strips from the upper branches, and the leaves frequently opposite. The wood is soft. *E. amygdalina* is the "Messmate" of the Southern Ranges and attains gigantic proportions, but *E. radiata* seldom rises above forty or fifty feet, and flowers even in a shrubby state.

6. *E. Gunnii*, "the Swamp Gum Tree" of some districts which does not attain the large size in N.S. Wales as in Victoria, and prefers in the former colony the sides of moist ranges where it flourishes at a considerable elevation above the sea. It is a species, which being common to Tasmania and the Southern districts of N.S. Wales, seems to require similar conditions to those of *E. globulus* for its perfect development.

7. *E. polyanthema*, the "Poplar Leaved Box" or "*Lignumvitæ*," the latter name being derived from the hardness of its wood. Though described as growing on dry ridges and hills, and rising exceptionally 250 feet, it is found in N.S. Wales on creeks or moist flats, and is comparatively a small tree and of slow growth.

8. *E. rostrata*, or "River Gum," the most widely distributed Eucalypt in Australia. Baron Mueller regards this species as the most important of the whole genus, not merely on account of its therapeutic and economic properties, but because it is exceedingly rapid of growth and admirably adapted for "grounds with stagnant humidity." It is remarkable that *E. rostrata* does not occur on the eastern side of the Dividing Range in N.S. Wales.

I have brought these Eucalypts under the notice of cultivators, as the species appear well calculated for the purpose of counteracting the baneful influences of malaria, and of flourishing under conditions similar to those of *E. Globulus*; whilst as some of them occur at different elevations and in various geologic formations, they may supply the place of that species in regions where experience shows is unsuited for the climate or soil. Of all the species in N.S. Wales, none are so likely to succeed in moist or depressed localities as those indicated, and it would be for the public benefit if the Government were to try the experiment of planting them for forest purposes. *E. Globulus* has acquired a world-wide reputation and deservedly so, but the properties of other species remain to be developed, and to afford to medicine and the arts a means of ameliorating the ills of humanity. Baron F. von Mueller has treated nobly of the genus Eucalyptus, in his splendid work *Eucalyptographia*, and whilst I would bear testimony to the accuracy of that eminent botanist in his descriptions of species (so far as known to

me,) I desire to recommend from personal observation those which I think worthy of cultivation for sanitary objects.

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## TO WILSON'S PROMONTORY OVERLAND.

BY J. B. GREGORY, LL.M., AND A. H. S. LUCAS, M.A.

### PART III.

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WE may premise that in a walking tour of this kind, even with a pack-horse, collecting is not quite so simple as it is on a Club excursion or when one is staying in the country at a hotel. In the first case one can bring home all one's findings the same day, and set them out the same evening, or at least see that they are placed in a position of security and of convenience for final preservation. In the second the hotel serves as head quarters to which all spoils can be taken, and where they can be left while fresh sallies are being made in the neighbouring country. In our case the difficulty was enhanced by the fact that except in the Promontory itself we were not taking the *route* in going which we proposed to take on our return. So a cache of specimens was, save in the Promontory itself, impossible. As the horse had to carry tent, &c., and a fortnight's provisions (not the least weighty part thereof for himself) it was not possible to load him with much collecting tackle. As the provisions diminished of course his ability to carry specimens increased. Another difficulty in collecting was the necessity for forced marches. Our distance had to be done, and done in a certain time. As we tramped some 240 miles in one fortnight, with an average of 17 miles a day, and as the horse had to be led, it was impossible to linger long in the way or to make any serious divergence from the track. The country was not an easy one, and at the close of each march fatigue prevented any great exertion to secure an object which might have to be hunted. We limited then our scientific objects to these; to see the bush in its native wildness, and the plants and animals as they live in it, and to acquire possession of such specimens as it might be convenient to capture, to carry, and to preserve.

The ground we traversed was a classic collecting ground. Some thirty years ago Baron von Mueller worked up the plants of Wilson's Promontory and of the country between Stockyard Creek and Griffith's Point. Here, alone, for four days without food, reduced one night to his last match wherewith to light a fire, while the rain was drenching him, our pioneer readily faced the chances of death by cold, exposure, and hunger, in order to add to science a knowledge of the Flora of these interesting districts.

We passed through a variety of habitats each with its appropriate Flora and Fauna. From Trafalgar to Foster we were in the Forest Ranges ; from Foster to Yanakie, and again from Yanakie to the Powlett River, we traversed heaths, scrubs, and swampy plains ; the Promontory consists of rugged granite uplands ; between Tobin Alloc and Tooradin we skirted the Koo-wee-rup Swamp ; and the rest of our journey was through lightly timbered undulating country of very moderate elevation.

In the Forests tree-ferns filled every gully, and added a charm to every prospect. The mighty Eucalypts with their white trunks towered all around us. Ever and anon as we wound along our ridge track we skirted the head of some valley, which widening out below gave us a view of the timbered heights around and beyond. In the deeper gullies the creeping and climbing ferns formed green bowers of tropical luxuriance without tropical discomfort, as cool as they were lovely. It seemed a desecration to cut the fronds of the tree-ferns in sheaves for our beds, but nature had provided enough and to spare. We found a pretty creeper around the fern-trunks, *Fieldia australis*, the only Victorian representative of the *Gesneraceæ*. It was in fruit. The berries are as large as a cherry, pure white, and with the rows of seeds visible beneath the epicarp. Mr. Robinson called our attention to *Sarcocylus parviflorus*, a pretty and fragrant epiphytic Orchid, which was in full flower. The plants were climbing about dead twigs of probably the Musk Aster. The latter was as usual abundant, and filled the forest paths with a pleasant and not overpowering aroma. *Convolvulus marginatus* and *Billardiera longiflora*, the white corolla of the former tinted with purple, and the lemon-coloured flower-bell of the latter tipped with violet wedges, were also in bloom. Both purple and white varieties of *Solanum aviculare* were abundant. *Pittosporum undulatum* was in fruit ; we only came across one shrub, but it was with much pleasure that we saw this familiar garden shrub for the first time in its native haunts. The paths we have mentioned between Mirboo and Foster as being nearly knee-deep in mud were clad in places with green garments, consisting chiefly of *Polygonum Hydropiper* and *Isolepis setacea*. These were interesting, as being British species they recalled wet woodland paths in the Old Country. At first also they deceived us, for the green track in the distance seemed to promise firm ground ; but soon we grew to lament the too green vista as we waded somewhat wearily on.

Of animals we did not see many in this Forest land. An injudicious Brown Snake crossed our path between the van and rear-guard, and was scotched, and then killed. Towards evening the little brown wallabies startled sprang to right or left into the depths of the woods as we passed. The bears up aloft called our attention by their grunting. Braces of black cockatoo cried to one another,



and now and again the piping of the lyre birds aroused our flagging spirits as our day's march drew to its close, but we never saw the birds themselves. The tameness of the lizards was remarkable. A rather large *Hinulia* on one occasion climbed shyly on to the knee of one of us to obtain fragments of the lunch he was eating. It was noticeable too, the ease with which they piloted a semi-aerial course along the fronds and branches of *Pteris incisa*, &c. We were not much troubled with the Leeches, and were warned by the presence of the Wire-grass when to expect them. We observed very few insects, among the Hill Butterfly, *Hipparchia*.

The heaths and swampy plains were characterised by the prevalence of the Xanthorrheas, the great and small Grass Lilies, *Xyris gracilis*, *Limnanthemum exaltatum*, *Prasophyllum* sp., white and blue-flowered forms of *Dianella revoluta*, large patches of the Coral Fern, *Hibbertia angustifolia*, large-flowered specimens of *Utricularia dichotoma*, were the most conspicuous of the swamp flora. *Sprengelia incarnata* and *Epacris microphylla* occupied dry knolls, and the low ridges which separated the creeks near Foster. Here, too, we found *Helichrysum Baxteri*, which Baron von Mueller informs us, has not been found so far South before. It was plentiful. An entomologist would find the country between Foster and Yanakie Station peculiarly rich in Lepidoptera. From Yanakie fences to the Tarwin settlement our surroundings were desolate. Yet even here we found objects of interest. Every few hundred yards we startled a Grass Parrakeet, and were glad to see this rare game bird in such abundance. Big black wallaby, (*H. ualabutus*), dashed off into the scrub, leaping for their lives, as we disturbed their lair. In the loneliest part of our walk, near the Bald Hills of the Hoddle Range, a pair of Dingoes came in sight. They also sighted us, lifted their heads and sniffed. Apparently they sniffed danger, for they speedily turned tail and bounded off, retaining, however, a certain amount of dignity in their movements. A whip-snake here met with his fate. But on the whole, snakes were very shy of us, and snakes do not constitute a very serious element of danger in camping-out excursions.

Among the sands between Yanakie and the shore we found colonies of marine, and also of fresh-water, shells, all of recent species. They were perhaps merely drift shells from the sea and from the marshes surrounding Shallow Inlet respectively. But one could not help speculating on a former occupation of the now sand-deluged station by the sea, and by stagnant pools. The shells occurred far inland.

Both limestone and coal appear along the south coast of the mainland and the west coast of the Promontory. Mr. Cresswell, in his paper on the "Geology of Griffith's Point and Kilcunda," mentioned the out-crop of coal-seams on the shore between those places. We came across a seam of poor lignite not far from the

point, at which we struck the sands first. The coal here is of course valueless, but the limestone of Waratah Bay is largely worked for lime. Mr. Miller, the manager of the Yanakie Station, is on the keen look out to develop the resources of this unpromising district, whether limestone, or gold which he has detected in the Hoddle.

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## NOTES ON THE HABITS OF NATIVE BIRDS.

BY I. BATEY, SUNBURY.

*Read before the Field Naturalists' Club of Victoria, 10th Aug., 1885*

### PART I., CROWS.

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THE Carrion Crow is a bird too well known to everybody to require any description of his outward garb now. He is held in utter detestation by most persons, but his congeners—the ravens—were illustrious enough to figure in Holy Writ, besides they were sacred to the god Odin or Woden of Scandinavian mythology. Being connected with a noble family is of just as much use to him, as our rich friends at home are to us out here. Dame Nature has turned Mr. Crow out of her universal workshop to act as “scavenger-general” to the world, and to make him a thoroughly effective agent she made him a gregarious bird. This is an extremely wise provision, for it means unity and co-operation, a combination productive of the largest amount of work in the shortest space of time. With the exception of the white cockatoo, the crow is the most cunning bird with which I am acquainted. He rapidly becomes alive to a sense of danger if persecuted with the gun or poison. With regard to the variation of colour in the iris of the eye, which in some birds is white and others black, I am of opinion that this is due to age, as in all the young birds just out of the nest which I have examined, not one had white eyes. Magpies, when young, have brownish or black eyes, which after a certain period change to a rich coppery-red.

The creed of the crow is “increase and multiply.” In the perpetuation of his kind, he has a strongly-defined sense of the emotion of love. He marries wholesale, and could statistics be taken it would be found that but a very small percentage of these birds fail to enter the connubial state in the breeding season.

Instead of contracting his means of subsistence, settlement has greatly enlarged it. It must not be supposed that because he devours carrion he subsists on that alone. His dietary scale commands a far wider range. About the creeks here, a thorny bush

(*Hymenanthera Banksii*) grows, which bears a profusion of juicy bluish-coloured berries on which the crows feast largely. They have also discovered the object of vineyards, and have developed a strong liking for grapes. It is astonishing how they will persevere in their attempts to steal this fruit. If permitted to exercise their own wills, they are great vandals, destroying more than they eat. Cunning, as they unquestionably are, they have yet to learn that when raiding on your grapes silence is golden. When swooping down for a dessert of Hermitage or Reisling, some of the crowd are bound to utter the well known "caw caw." Grasshoppers are greatly relished by these birds, and when abundant form the main staple of their diet. It is very interesting to watch how the birds scour the country where those insects are plentiful, setting about their work in a methodical way by spreading over a large tract and apparently sweeping all before them. They are large consumers of worms, caterpillars, grubs, beetles and other insects. In short nothing of the kind I have mentioned comes amiss to them. As a bird, there is little to admire about a crow, but as a useful scavenger he deserves to be respected.

I regard him as both cowardly and cruel. Anyone who has seen a crow hanging on to the tail of a poor weak motherless lamb, will, I think, endorse this opinion. From what I have witnessed, he seems to lack the courage to kill the lamb outright, and evinces a fiendish delight in tormenting the unfortunate creature. Just observe him should the lamb break from his hold, see his heartless look, listen to the horrible mocking "caw" he gives. I used to fancy when I saw a crow at such mischief that the interpretation of that peculiar "caw" was, "I will pull out your eyes yet." To the uninitiated this "caw" might be thought to be the ordinary voice of the bird, but an ear that is educated to what I shall unhesitatingly term bird language, could tell the true meaning in the altered modulation of the bird's utterance.

Though many may laugh at me as theoretical, I maintain that the "caw caw" of a crow can convey according to the manner in which it is uttered a great variety of meanings, as for example, joy, alarm, love, fear, agony, mockery. &c. This rule applies to all birds that have a voice.

The nervous organisation of the crow I consider more sensitive and acute than that of most birds. When struck by shot it frequently gives a screeching caw, proving that it is extremely susceptible of pain. When winged it makes strenuous efforts to escape, but when finally cornered accepts its fate with stoical indifference, blended with a certain amount of fight.

Speaking of this reminds me that in many birds the eye is the medium by which "the agony of terror" is expressed. Some twenty years ago, on the Old Man Plain, Riverina, I broke a teal's wing.

It fell on dry land, and as these birds are exceedingly clever in hiding themselves when wounded, if your attention is withdrawn from them for a moment, I at once dashed in pursuit. The poor creature tried hard to elude me, but when it found its efforts useless the look of mute agonised terror it turned upon me, made me feel actually ashamed of myself.

*(To be continued.)*

## CORRESPONDENCE.

### MIXTURE FOR PRESERVING BIRD AND ANIMAL SKINS.

*(To the Editor of the "Victorian Naturalist.")*

Sir,—As I have frequently been asked by members of the F.N.C. for the recipe of a good mixture to preserve Bird and Animal Skins, I give the ingredients below of the one believed to be the best known in Britain; and hope you may find space for it in your journal.

|                     |   |   |                       |
|---------------------|---|---|-----------------------|
| Arsenic             | - | - | 6 ounces.             |
| Corrosive Sublimate | - | - | 3 ounces.             |
| Yellow Soap         | - | - | 2 ounces.             |
| Camphor             | - | - | 1 ounce.              |
| Spirits of Wine     | - | - | $\frac{1}{2}$ a pint. |

Place the above in a saucepan, and put the latter on a slow fire, stirring it quickly until all the ingredients are dissolved, and form one mass; after which it can be poured into a tin canister that has a top, or into a wide-mouthed bottle; when cool it is ready for use.

I am,

Sir, &c.,

T. AUGUSTUS FORBES-LEITH,

30th Sept., 1885.

F.N.C.

## ERRATA.

P. 69, l. 29—insert "of the" after "felspar".

P. 69, last line—for "Weannie" read "volcanic."



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OF THE

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## CONTENTS:

|                                                                                   | PAGE |
|-----------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                        | 93   |
| Excursion to Lal Lal. ... ..                                                      | 94   |
| Remarks on Victorian Gall-Making Coccidæ. By O. A. SAYCE.                         | 99   |
| Geological Sketch of South Western Victoria. (Part 1.) By<br>JOHN DENNANT. ... .. | 102  |
| Imbedded Tortoises in New South Wales. ... ..                                     | 103  |
| On Crows. By I. BATEY. ... ..                                                     | 104  |

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Copies of the Annual Report and List of Members for 1884-5, with Rules, etc., can be obtained on application to the Hon. Sec.



THE

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## THE FIELD NATURALISTS' CLUB OF VICTORIA

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THE monthly meeting of the Club was held at the Royal Society's Hall, on Wednesday evening, 11th November, 1885.

The president, the Rev. J. J. Halley, occupied the chair, and about sixty members and visitors were present.

The hon. librarian acknowledged the receipt of the following donations to the library:—

"Prodrum of Zoology of Victoria," Decade XI., from the Government; "The Australasian Scientific Magazine," No. 3, from Mr. J. Stirling, F.L.S.; "Proceedings of the Royal Society of South Australia," for 1884, from the Society.

The president read a descriptive account of the excursion to Lal Lal on the 9th inst, and on the motion of Messrs Wing and Topp, it was unanimously decided to forward a letter of thanks to the Ballarat Field Club, for their hospitality on the occasion.

The following persons were elected members of the Club:—Miss Lewellin, Dr. Cox, Messrs. J. A. Gibbs. R. W. Hooke, F. A. Keating, Wm. Scott, and Masters A. and C. Yelland.

Papers read:—1. By Mr. A. W. Coles, "Notes of a Collector's Trip to North Queensland." The writer gave an interesting account of a recent collecting tour in tropical Queensland, principally in the vicinity of Cardwell. The paper was well illustrated with specimens, about 100 species of birds having been taken during the trip.

2. Mr. C. A. Topp, M.A., read a paper by Mr. H. T. Tisdall, F.L.S., Walhalla, "Notes on the Fungi of Mt. Baw Baw," part II. This portion dealt principally with the larger species of the genera *Polyporus*, *Mylitta*, and *Boletus*, and fine specimens and drawings of the different species were exhibited.

The following were the principal exhibits of the evening:—By Mr. F. G. A. Barnard, a lizard from Lake Learmonth; by Mr. A.

J. Campbell, six Queensland honey-eaters with nests and eggs, viz:—the yellow honey-eater (*Ptilotis flava*), the uniform coloured honey-eater (*P. unicolor*), Lewin's honey-eater (*P. Lewinii*), the fuscous honey-eater (*P. fusca*), the brown honey-eater (*Stigmatops ocularis*), and the blue-faced honey-eater (*Entomyza cyanotis*), the nests and eggs of the two first mentioned being new to science; by Mr. J. Percy Chirnside, specimens from the Geyser Basin, Sulphur Mountain, etc., Yellowstone Park, U.S.A.; by Mr. A. W. Coles, about fifty species of Queensland birds, native weapons, etc.; by Mr. J. E. Dixon, orchid *Chiloglottis Gunnii*, in bloom; by Mr. C. French, a large scorpion from Sumatra; by Master G. French, a rare orchid *Pterostylis reflexa*, var. *revoluta*, from Oakleigh; by Mr. T. A. Forbes-Leith, nests and eggs of the following birds, the white-shafted fantail (*Rhipidura albiscapa*), the restless fly-catcher (*Seisura inquieta*), the red-capped robin (*Petroica goodenovii*), and the white-fronted ephthianura (*Ephthianura albifrons*); by Rev. J. J. Halley, mounted slides of diatoms, *Arachnoidiscus Japonica*, *A. heliopelta* (arranged) and *Eupodiscus Rogersii*; by Miss Halley, water-colour drawings of thirteen orchids from the wild flower exhibition; by Mr. H. W. Hunt, nests and eggs of Victorian birds; by Mr. H. Kennon, ammonites from Whitby, England; by Mr. D. Le Souëf, a rare lizard from Wodonga, ancient greenstone tomahawk from New Zealand, and granite polished by glacial action, from George Sound, New Zealand; by Dr. T. P. Lucas, eggs of the larger Australian birds, viz., Cassowary, Emu, Spotted Emu, Tallegalla, Mallee Hen, Megapode, Pelican, Albatross, and Native Companion; eggs of Oyster-catcher and Terns, from Australia, South Pacific, and Britain; Australian Lepidoptera *Lycenidae*, *Agoristæ*, *Noctuæ*, etc., including several species of banana-feeding Ophideres from Queensland; by Mr. J. E. Prince, a diatomoscope; by Mr. F. Reader, fungi hitherto unrecorded for Victoria, *Peziza Drummondi*, Berk., *Hymenorrhæte tabacina*, Sow., *Guepinia pezizæformis*, Berk., *Ustilago utriculosa*, Tul., also plants from Studley Park, *Typhaceæ* to *Cyperaceæ*; by Mr. Thie, asbestos from New South Wales, Tasmania, and America, silver-ore from Silvertown, N.S.W., and Victorian sea-weeds; by Mr. H. T. Tisdall, fungi and drawings in illustration of his papers.

After the usual *conversazione* the meeting terminated.

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## THE EXCURSION TO LAL LAL.

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THE ninth of November, 1885, will be a day long to be remembered by such members of the Field Naturalists' Club of Victoria, as joined in the excursion to the Lal Lal and Moorabool falls. This

locality had been selected at the last monthly meeting, in order that the Ballarat Field Club might be invited to form a joint excursion, with the view of bringing the Clubs into closer relationship. The Ballarat folks not only readily agreed to the proposal, but also asked the Melbourne visitors to consider themselves their guests for the day.

A portion of the contingent had gone up to Ballarat on the previous Friday and Saturday, and joined the local members at the railway station of the Golden City, in time for the early morning train at half-past six. After a little more than a half hour's ride, the train stopped at Lal Lal, and the whole party mustered on the platform. Buggies were waiting for those ladies who considered the three miles walk too much for the beginning of a day's work, a kind attention, however, that was not taken advantage of by any of the ladies from the metropolis, who preferred on such a beautiful morning walking over the green sward.

The hon. secretary and several others stayed at the station, awaiting the arrival of the Melbourne train, which would bring up those who could make only a single day's holiday. Mr. F. M. Krausé, hon. secretary of the Ballarat Field Club, and Professor of Geology, Mineralogy, and Mining at the Ballarat School of Mines, with Mr. A. Mica Smith, B.Sc., Professor of Chemistry, remained with this party, and during the interval between the arrival of the trains, took the opportunity of visiting the works of the Brown Coal Company, and giving the visitors some account of the geology of the lignite deposit, one of the thickest in the world, but unfortunately not of much commercial value, also of the Iron Company's Works, some three miles distant on the Moorabool River.

The other party followed the lead of Mr. Jas. Oddie, (president B.F.C.) on a piebald pony, or rather that of a veritable Highland piper, engaged for the day by Mr. Oddie, who soon filled his bags and drew from his pipes such inspiring marches, that the way seemed short while following his ribbons gaily fluttering in the breeze. A short detour was made for a view of the falls on the Lal Lal "dashing of waters" Creek, and then across the open country a line was made for the Moorabool, the examination of the creek being left for a later period of the day. This walk, in the somewhat early morning, was pleasant in the extreme, the views along the Moorabool valley being extremely fine. The Eucalypts at this period of the year putting out their young foliage, give a variety of colour that redeems the landscape from the monotonous sameness that characterises it at other seasons. Indeed, the reds and yellows mingling with the greys and olives gave a variety as charming as the autumn tints of northern lands. Well-fed and contented

cattle going to water or to pasturage, gave the necessary moving life, while the picture was completed by the homesteads that stood amidst plots of cultivation smiling in their spring verdure. Young ladies vainly regretted that their sketch-books had not found a place in their necessary impedimenta. A pleasant walk of three miles and a half and the Moorabool Falls are reached, the piper struck up a triumphant pibroch, and on a little bank of brilliant green the camp is set, and the ever thoughtful president of the Ballarat Field Club soon has baskets opened up for a welcome snack, by way of a stay after an early breakfast and ramble. A little rest, and the falls and other beauties of the place are keenly examined, though when the piper plays dance music, young feet and some not so young, cannot resist the temptation of a highland fling.

Our president and another now returned to the Lal Lal Falls, to meet the Melbourne party conducted by Mr. Krausé. The Lal Lal Creek has at this place cut its way through the basalt, and falls a depth of 110 feet. On either side of the stream, below the falls, fair specimens of basaltic columns rise. Descending to the bed of the stream, it is found to be working its way through basalt boulders, that give place to granite, where the volcanic stream seems to have ceased. A mile of very rough walking, and the party including one lady, reached the junction of the creek and the Western Moorabool River. Our leader promising an easier walk, the journey was continued up the latter stream. On the way the entomologists regretted that the fine bushes of *Bursaria spinosa*, passed on the way were not yet in bloom, as then they might have reaped a fine harvest of beetles, etc. A bar of basalt crossing the river, causes small falls, and adds to the beauty of the gorge. About a quarter of a mile further, and the pretty Moorabool Falls come into view, the river shooting out over the basalt and falling about fifty-two feet into the pool below. Unfortunately for the collectors of fresh water algæ, there was too strong a current for their branch of naturalising.

The geological features of the district are made up of post, upper and middle pliocene, newer volcanic, lower silurian, and granite. From a map published by Mr. Krausé in the Ballarat School of Mines Report for 1882, it will be observed that of a large portion, the description is post pliocene on volcanic, on middle pliocene on granite. The map also shows how a lava stream, descending from Mt. Buninyong or Warrenheip, certainly extinct volcanoes, notwithstanding Dr. Taylor's theories, blocked the old lead with its many lateral streams forming a lake with its flood waters, and as the paper by Mr. Krausé tells us, discharged their transported *debris* of trunks of trees, roots, branches, leaves, and fruit, other physical changes occurring; thick beds of clay and gravel overspread the vegetable layers, and

pressure and moisture, chief chemical factors in the production of bitumen, brought about the conversion of wood into *lignite*.

Baron von Mueller considers the vegetable fossils of the lignite beds, to be identical with those found at Haddon, and Napoleons and other parts of the Ballarat district, being evidently remains of gigantic conifers.

The hard pull along the bed of the stream over the boulders, and through the prickly scrub, made the camping ground with its green carpet and white table-cloth look very inviting, and the strains of the piper playing a lively march for dinner sounded sweet music in the ears of hungry scientists. The entertainment for the day had been generously provided for by Mr. Oddie, and eatables and drinkables were abundant. Some geologists and professors were tapping, not rocks, but bottles of chablis and claret; entomologists carving hams and pies; botanists busy at tarts and sandwiches, while the genial president of the Ballarat Club himself presided at the tea-pot, and ladies were "ministering angels," everywhere. Protoplasm having been consumed in sufficient quantity, at the instance of the chairman, Mr. Oddie, the healths of the Queen and the Prince of Wales were drunk with the usual musical honors. Mr. Halley was called on to speak, and this he did, by proposing on behalf of the Melbourne visitors a hearty vote of thanks to the Ballarat Field Club and its officers for the kind thoughtful way in which all arrangements had been made, and complimented the city of Ballarat on its admirably conducted School of Mines, with its efficient staff of officers. Cheers long and loud endorsed the president's words, and Mr. Oddie briefly replied, and said how pleased his Ballarat friends were to be thus visited, and announced tea for five o'clock. Little groups of collectors now started out in all directions. Green nets might be seen waving in pursuit of deftly flitting lepidoptera. Umbrellas spread to catch the coleoptera shaken from the bushes. A follower of Isaac Walton vainly trying if speckled trout lived in the pool beneath the waterfall. A painter in oils trying to catch the changing beauty of the landscape. A couple of photographers with their heads constantly under their black cloths. Botanical collectors breaking boughs, gathering flowers, digging roots, etc. One member trying to drown an unfortunate lizard, another helping a young lady high up a rocky bank, with his geological hammer stuck in the back of his belt, and as he bent to the ascent, short sighted people wondered if the missing link had at last been found. Indeed in several cases, stern young scientists went off in couples and fours, like ordinary young people at an ordinary picnic, showing how much human nature there is in naturalists. Old fogies like the presidents chatted with each other and with the professors, concerning things scientific and political, gold mining and university teaching. The fern-gatherers

made up splendid bunches of maiden-hair, and other ferns, while those who were not natives admired the abundance of the old English favourite wild flowers, buttercups, and red and blue pimpernels.

Tea, cocoa and inviting eatables were ready at about five, and after being duly appreciated, at the request of Mr. Oddie, Mr. Halley asked the assembled guests both from Ballarat and Melbourne to signify their acknowledgement to Mrs. Krause and the Misses Jones, who had taken much trouble in the preparation of the various good things, and to Mr. Cameron and his family, who provided the conveyances to and from the station, and rendered other kindly services. Cheers being heartily given by all present.

As the evening drew on, and the setting sun began to cast long shadows, "Auld Lang Syne" was sung, and young and old joined in dancing Sir Roger de Coverley. Rounds of huzzahs were given for Mr. Oddie, and the party proceeded to tramp, not wearily, but gaily back to the Railway Station. The Lal Lal falls were once more visited, and the station reached in ample time for the half-past seven train, in which Mr. Halley had arranged for a special saloon compartment, which was found a great convenience by the party, as at the various stations the word "engaged" displayed in the window prevented the intrusion of strangers, not even the great crowd at Geelong being allowed to invade the scientists' sanctum.

Holiday time makes late trains, and the farewells at Spencer Street were very hasty, not many minutes being left in which to catch the last suburban trains.

Twenty-five members and visitors from the Melbourne Club, of whom seven were ladies, and the total number present of both Clubs with friends numbered about seventy. All agreed that if much collecting was not done, or the store of knowledge much added to, a very enjoyable day, with the grandest of weather, beautiful scenery, and genial companionship, combined to make up an outing long to be remembered as the first united gathering of amateur naturalists held in Victoria; and hopes were expressed that such a union of forces might become at least an annual arrangement.

Owing to the season for wild flowers being almost over, and the weather hardly warm enough for insect life, the number of specimens collected was not large, but the more noticeable taken in the several departments are enumerated below:—

Botany.—Phanerogamous plants.—The following were noted as uncommon near Melbourne:—*Clematis aristata*; *Viola betonicifolia*; *Tetratheca ciliata*; *Plagianthus pulchellus*; *Rhagodia nutans*; *Epilobium tetragonum*; *Discaria Australis*, (syn. *Colletia pubescens*); *Sambucus* sp.; *Gratiola Peruviana*; *Veronica Derwentia*; *V. gracilis*; *V. peregrina*; *Euphrasia Brownii*; and *Ajuga prostrata*.

Ferns.—Eight species noted, among them being *Grammitis rutifolia*; and *Asplenium flabellifolium*.

Entomology.—Of beetles, Longicornes were perhaps the most numerous, amongst those taken being *Amphirhoe decora*; *Enchoptera Africalis*; two Zoedias; and a small un-named species resembling an *Agapete*, hitherto only known to have been taken near Melbourne. Of the other families Scarabeidæ, Cleridæ, Elateridæ, and Chrysomelidæ were represented by the commoner species. Of Buprestidæ, only one un-named species of *Stigmodera* was taken.

Of Lepidoptera, several species of butterflies and moths more or less local were taken, also a few Hymenoptera and Neuroptera.

## REMARKS ON VICTORIAN GALL-MAKING COCCIDÆ.

By O. A. SAYCE.

(Read before the Field Naturalists' Club, October 12th, 1885.)

It is generally thought, I believe, that the Galls or Excrescences found on our forest trees and shrubs are all the products of Hymenopterous insects. I have given some little time to investigating them, and have noticed that most are formed by a family of insects, totally different in structure, as well as habits, called Coccidæ, well known to horticulturists under the name of Scale insects. They belong to the order *Homoptera*, which is divided by Latreille and Westwood into three sections.

Sect. I., *Trimera*. Tarsi 3-jointed; antennæ minute, setigerous; wings areolate. The well known noisy Cicada, (often mis-called Locust), is a type.

Sect. II., *Dimera*. Tarsi 2-jointed, antennæ moderate, filiform, 5-10 jointed; wings subareolate.

The destructive and world-distributed family of *Apidæ*, with the genus *Phylloxera*, well known on account of its ravages amongst vine-yards, are types.

Sect. III., *Monomera*. Tarsi 1-jointed, antennæ 6-25 jointed, wings not areolate.

The latter is the one to which the Coccidæ belong. These insects, which are ordinarily of very small size, are most injurious to the interests of horticulturists; their powers of propagation are excessive, and owing to the covering which they form to protect themselves, they are very difficult to exterminate. They are one of the most anomalous tribe of insects with which we are acquainted.

The females become more and more imperfect in form as they reach the *imago*, or adult state, losing all power of locomotion, and, in many species all trace of articulations in the body and limbs, becoming, in fact, inert and fixed masses of animal matter, motionless,

and apparently senseless. The males become winged, possessing like the *Diptera*, one pair. The mouth in the perfect state is obsolete.

The *Cochineal* insect, popular on account of its value as a dye, is a member of this family.

In Australia, some species form large excrescences on the branches and leaves of trees and shrubs, and frequently exist in such numbers as to greatly alter the shape of the leaves and branches, and sadly disfigure, and eventually kill the tree by robbing it of the sap.

I have noticed a considerable variety of Galls in different parts of Victoria, but in this paper will only give short notes on two of the more common and widely extended species.

The only literature upon our Gall-making Coccidæ that I know of, is a brief paper by H. L. Schrader, published in the Trans. of the Entomological Society of New South Wales, for 1862.

He has considered it necessary, on account of their forming Galls, and of their difference in structure and habits to any previously known in other parts of the world, to divide them into three genera.

1. *Brachyscelis*. Where the females have six legs complete, but short, and unfit for use.

2. *Opisthoscelis*. Where they have only two long posterior legs.

3. *Ascelis*. Where there are no vestiges of legs.

The excrescences of the genus *Brachyscelis*, I have found commonly upon different species of young Eucalypts. I shall confine my remarks to only one species.

The male Galls are situated on the leaves, generally along the mid rib, where they are often found thickly together. In shape they are similar to a trumpet, having the widest part facing outwards, and showing a hollow down the centre. In length, they are about 15 lines. The male insects are minute in size, possessing a pair of wings, and are furnished with two long anal setæ. They live but a short period like the *Ephemeridæ* or May flies, to which they are most analogous.

The female Galls are found on the branches of the same trees as the males, but much larger. They are subject to considerable modifications in size as well as shape; generally the ultimate form is about  $1\frac{1}{4}$  inches in length, and  $\frac{1}{2}$  inch through at the thickest part. At the apex is a small hole, and splitting the Gall open reveals the female insect. On first appearance it might be mistaken for a pupa of a moth, as its shape is similar. The body is clothed with a white, downy secretion, and is divided into eight segments, terminating in two short hard anal setæ. The legs are very short, and useless as regards locomotion; the posterior are the most perfect, the anterior the least so, they are hardly discernible by the naked eye. The mouth is placed between the first and



second pairs of legs. A pair of what appear to be eyes, situated in a furrow on each side of the mouth, can be seen by the microscope.

The antennæ are minute, and placed in front of the first pair of legs.

I have found colonies of young in May and October. They were congregated in enormous numbers in the parent Gall, round the body of the insect. They were very active, and ran about quickly. None were bigger than a pin's head. Examined under the microscope they were seen to be of an oval shape. The tarsi of each leg terminating in two short filaments. The antennæ setaceous, and terminating in four filaments, two long, and two short. The body divided into eleven segments, terminating in two long filamentous setæ. Round the margin of the insects at regular intervals, were short outstanding hairs forming a fringe.

*Opisthoscelis* sp. I shall only remark upon one species of this genus. The Galls I have found, both male and female, on the leaves of young Eucalypts. They are much smaller than the *Brachyscelis*. The female galls are spherical in shape, about the size of a pea; viz., 10 lines in length, and 10 broad. The Galls form on the under side of the leaves, and the mouth or orifice opens on the upper.

The Galls of the males form on the same leaves: they are much smaller than the females and conical in shape. The male insect is a good deal like the above mentioned species of *Brachyscelis*, but is thicker in the body, has shorter anal setæ, and its body, legs, and antennæ, are covered with short hairs.

Cutting the female Gall through, shows a very anomalous insect, appearing as a small mass of jelly, covered with a white dust. It is five lines long, and four broad, and about three lines through from dorsal to ventral side. The posterior pair of legs are well developed and move actively. The first and second pairs are absent. The whole of the fore part of the insect is permanently glued to the inside of the gall.

I have found young appearing in October and November. They are similar in appearance to those of the young of the genus *Brachyscelis*, excepting in not having a fringe of hairs round the side, and being scarlet in colour. On making their exit from the parent Galls, they ascend the branches to the young, fresh shoots at the extreme tips: there they affix themselves by their rostrum, and form galls, gradually increasing in size, and lose their anal setæ as well as their former activity.

I have frequently found parasitical grubs of microscopical size, alive in different species of galls, and in November I noticed several minute *Hymenopterous* flies allied to the genus *Chalcis*, just leaving the galls of the species of *Opisthoscelis* above mentioned.

I have prepared slides for the microscope of the above mentioned

species and young, and also of different parasites that attack them; and will be glad to show them at the close of the meeting, to any one who may be interested in the subject.

I regret that opportunities have not occurred to allow me to work on this subject more continuously and thoroughly, so that I could have given more comprehensive details upon their life history. I feel that I owe an apology to the Club for its incompleteness, but, considering the importance of Economic Entomology in all its branches, I decided to bring it before you as a contribution toward a better knowledge of this branch of practical science.

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## GEOLOGICAL SKETCH OF SOUTH-WESTERN VICTORIA.

BY JOHN DENNANT. PART I.

(Continued.)

The intrusive rocks are probably much older than those at the Chetwynd, and differ altogether in appearance and composition. The Wando rocks are almost a serpentine, of a marked green color, giving on analysis but 43 per cent. of silica, with as much as 30 per cent of magnesia, while the dykes of the Chetwynd and elsewhere are of a wholly different and much more acid character.

When the slates are the surface rock, the soil is very poor, but as in many cases they are surrounded or overlaid by other formations, more or less denuded, great variations in the fertility of the land are observed. Along the valleys of the Glenelg and Wando, where the underlying primitive rock is concealed by thin patches of secondary strata, a very rich soil is produced. Opposite Roseneath, the junction of the slates with this last named formation is visible, and what is more interesting still, a few chains distant, shells of tertiary age can be gathered from a band of limestone overlying the mesozoic beds. The secondary rocks are an outlier of the lignite-bearing strata of the Wannon district, and the limestone is directly connected with the immense area of the tertiaries to the westward.

Although I close my remarks on this formation without being able to define its precise place in the geological series, there can be no doubt of its being the oldest in this part of Victoria, possessing perhaps greater points of resemblance to Lower than to Upper Silurian, notably in its high dip and generally perfect cleavage.

It certainly underlies the Grampian sandstone group, for granting that this does not now extend much beyond Mount Dundas, yet evidence is not wanting to show that at one time it had a much wider range; even in the vicinity of the slaty beds just described, remnants of it can still be recognised, insignificant in extent, but of

the greatest possible interest when studied in connection with the surrounding sedimentary deposits. Actual junctions are difficult to obtain on account of the *débris* of this once prevailing sandstone being now so widely scattered, but it is worthy of remark that it never develops a fissile structure in the neighbourhood of the "lower beds," in which not only this, but other leading characteristics of silurian strata are so strongly marked.

(*To be continued.*)

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## IMBEDDED TORTOISES IN NEW SOUTH WALES.

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[The following observations were made by the late William Keene, Esq., F.G.S., and are extracted from papers left by him. They were read before the Field Club, on behalf of Mrs. John Simson.]

THREE tortoises were found in the course of 1859, in the rock in the railway cutting between West Maitland and Singleton, New South Wales. The first tortoise was found on the 21st January, 1859, and was sent to His Excellency Sir William Denison, who presented it to the Museum, Sydney. It died in the course of the year. The second tortoise was found on the 20th October, 1859; it was about the size of half a crown. It was alive, but its mouth was sealed; it had been injured in the breaking of the rock, and died three days afterwards.

The third tortoise is the one in my possession. It was found on the 6th November, 1859, by Mr. Bewick, Superintendent of Works on the Great Northern Railway. It was found about the same place, on the same line of cutting where the others were found. The eyes and mouth were closed and did not open for two or three days after. The creature was exactly of the same kind, rather smaller than the first, and larger than the second taken. Mr. Keene weighed it accurately, and found it to weigh exactly sixty-nine grains. The tortoise has been kept in a glass jar partly filled with water, which is renewed every second day. It feeds on flies, prawns, and fish, in preference to any other animal food; it will not eat vegetables of any kind. In cold weather its powers of deglutition seems altogether suspended, and it remains often for weeks, sometimes the whole of the winter, without taking food. It has been weighed before it hibernates and afterwards. The last time it was weighed by Mr. W. Keene, (2nd October, 1871), it weighed 440 grains troy, (ten ounces avoird.)

The tortoise is singular, in so much as there has not been another one found which resembles it exactly in shape, which tends to confirm the evidence given of those who found it, that it came out of the solid rock. The rock was fossiliferous conglomerate, found in many

parts of the coal fields at the base of the coal measures, containing Spirifera, &c. The fragments of the piece of rock in which the first tortoise was found, were carefully packed and sent to the museum in Sydney. The piece of rock from which this tortoise came, was not preserved; perhaps it went to pieces and could not be collected.

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## ON CROWS.

BY I. BATEY.

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(Continued.)

ALTHOUGH crows associate in large flocks I imagine no ties of friendship bind them together. Magpies act as if they loved one another, as I will explain further on. The crow, in dangerous localities, displays sound judgment in the selection of a tree wherein to build the nest. The tree chosen is always a tall one, generally situated in a gully, or secluded creek or river bend. On the Murrumbidgee where they where unmolested they were not fastidious, a brigalow bush growing solitary on the plain, or a dead Murray pine served the purpose equally well. I remember, when going with another person to prepare a shepherd's camp in September 1882, finding a nest in a dead pine with the old bird sitting on it, her tail and wing feathers extending over the side. I threw a shingling hammer at the nest without disturbing the bird. We made sure she was dead, so I climbed quietly up the tree and grasped her by the wings and tail, when, to my surprise, she gave a loud caw. I feel certain the bird must have been sound asleep.

As I have already said, crows display much tact when breeding, and they are also knowing enough to maintain strict silence. Thus a pair will sometimes build and sit on their eggs in a tree close at hand, before you are aware of the fact. During incubation these birds become accomplished egg thieves, not owing to the fact that hen eggs are a more suitable food during that period, but because the temporary change in their usual routine of life, enables them to conduct such nefarious operations with a greater degree of success. I believe that the male bird does the thieving, which is conducted on a very sound basis, as it is extremely rare for him to try on his rascality if a man is about. One of my brothers, a selector at Lake Rowan, was prepared to give a reward of one pound to any person who would shoot an egg-stealing crow which haunted his place. He said that whenever he was absent, the bird would impudently alight on a tree close by, knowing well that his wife could not shoot him.

(To be continued.)



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THE

# Victorian Naturalist:

THE JOURNAL AND MAGAZINE

OF THE

**Field Naturalists' Club of Victoria.**

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The Author of each article is responsible for the facts and opinions he records.

## CONTENTS:

|                                                                               | PAGE |
|-------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                    | 105  |
| Fungi of North Gippsland. By H. T. TISDALL, F.L.S....                         | 106  |
| Collector's Trip to North Queensland. By A. W. COLKES.                        | 109  |
| Geological Sketch of South West Victoria. Part II. By<br>JOHN DENNANT. ... .. | 114  |

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

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The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

Copies of the Annual Report and List of Members for 1884-5, with Rules, etc., can be obtained on application to the Hon. Sec.



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## THE FIELD NATURALISTS' CLUB OF VICTORIA.

THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 14th December, 1885.

The president, the Rev. J. J. Halley occupied the chair, and about sixty members and visitors were present.

The hon. librarian acknowledged the receipt of the following donations to the library:—"Annual Reports of Ballarat School of Mines for 1882 and 1883," from Mr. F. M. Krause; "Plants of New South Wales, arranged according to Baron von Mueller's census," by Dr. Woolls, F.L.S., from the author; also Kirby's "Elementary Text Book of Entomology" and Howe's "Atlas of Elementary Biology," which have been added by purchase.

The hon. secretary read a short account of the Club excursion to Murrumbidgee, on Saturday, November 22nd, which had been fairly attended, but no specimens of any note were obtained.

The following persons were elected members of the Club:—Mrs. R. W. Hooke, Messrs. W. Ball, Edw. Crellin, C. Morris, M. Trickett, and Master L. Inglis.

Papers were promised for the next meeting by Mr. C. A. Topp, M.A., entitled "Further notes on the Utricularia," and Mr. F. Reader, on the "Immigration of Plants."

Papers read:—1. Mr. A. J. Campbell read a paper entitled "Oological Notes," in which he described the eggs of the following birds which had been recorded for the first time during the season just closed. The radiated goshawk, the red-tailed finch, the white-vented wood-swallow, the yellow honey-eater, the uniform-coloured honey-eater, the black-headed honey-eater, the white-headed sitella, the scaly-breasted lorikeet, the Australian cassowary, and the knot.

2. Mr. C. A. Topp read for Mr. J. Dennant, of Hamilton, "A Geological Sketch of South-West Victoria," Part II., describing the structure of the different ranges of the Grampian series. The writer stated that their age was difficult to determine, owing to the absence of fossils; and showed the sandy ridges of the County of

Lowan to be the remains of former sandstone ranges. His remarks were clearly explained by means of a carefully prepared geological sketch map.

The paper gave rise to considerable discussion, principally relating to the question of the rising or sinking of the Victorian coast-line.

Owing to the unavoidable absence of Dr. Dobson, and Mr. F. R. Godfrey, their papers were postponed until the next meeting.

Mr. C. French, F.L.S., contributed a short note on two rare humming-birds from Mounts Chimborazo and Pinchinca, South America, where they are found about 1000 feet above the snow line.

The following were the principal exhibits of the evening:—By Mr. F. G. A. Barnard, brown coal and lignite from Lal Lal, coleoptera collected at Lal Lal excursion, and a hawk-moth, *Sphinx convolvuli*, recently taken at Kew; by Mr. E. Bage, plants collected at Lal Lal excursion, also skeleton leaves of native plants prepared and presented to the Club by Mrs. Lewellin; by Miss F. M. Campbell, five kinds of fossil wood from Glenmaggie, Gippsland; by Mr. A. J. Campbell, new eggs in illustration of his paper, four rare hawks' and other eggs taken during his recent excursion to Northern Queensland, a cassowary skin and other rare Queensland birds, photographs of Townsville tribe of aboriginals; by Mr. J. P. Chirnside, geological specimens from Denver and Colorado, U.S.A.; by Mr. A. Coles, two fish stuffed by a new process whereby the colour is retained in the specimens; by Mr. P. Dattari, growing ferns *Lomaria lanceolata*, *Woodwardia aspera*, and *W. caudata*, from Greensborough, and *Aspidium hispidum*, from Warragul; by Mr. C. French, the rare humming-birds *Oreotrochilus Chimborazo*, and *O. Pinchinca* from the Andes; by Mr. T. A. Forbes-Leith, four American birds, the Maryland yellow-throat, a pair of Canadian nuthatches, *Sitta Canadensis*, a downy woodpecker, *Picus pubescens*, from U.S.A., and an Amazon oriole, also a specimen of the wild canary from Africa, compared with one of the domesticated birds; by Mr. R. Hall, larva of emperor moth; by Mr. H. Kennon, stalactites and stalagmites from caves at Portland; by Mr. F. Reader, grasses from Studley Park; by Mr. F. Spry, Victorian lepidoptera; by Mr. O. A. Sayce, microscopic parasites found on neuropterous insects taken at Lal Lal.

After the usual *conversazione* the meeting terminated.

## FUNGI OF NORTH GIPPSLAND.

BY HENRY THOMAS TISDALL, F.L.S.

(Read before Field Naturalists' Club of Victoria, 11th Nov., 1885.)

### PART II.

IN this paper I purpose to contrast the two great families of *Sporifera* and *Sporidifera* by comparing two sub-orders, one from

each division, namely, *Polyporei* and *Tuberacei*. With the exception of the *Agaracini*, which I described in my last contribution to our Society, these two orders are certainly the most noble and useful of the fungoid group.

Fungi are propagated by means of very small oval or round bodies called spores. In the family of *Sporifera*, these spores are produced on the tips of hair-like projections termed sterigmas, which issue from the extremities of thicker bodies (basidia); these basidia are thickly strewn on a membrane and grow all over it, putting one in mind of a field of Indian corn. This membrane or hymenium is differently placed in different orders; in *Agaracini* we have seen that it lines the gills placed under the pileus or cap, but in the *Polyporei* instead of gills, we find in the same place innumerable pores or tunnels as it were, placed side by side, penetrating the under-side of the pileus, sometimes only a little way but generally going almost through, being only stopped by the testa or outside skin. The *hymenium* is placed over the entire surface thus exposed, lining the cavities even to their extremities. The shapes assumed by the different species of *Polyporei* are truly Protean, but the greater number have the regular stipe or stem surmounted by a pileus as seen in the *Agaracini*, and vary principally in size, mode of growth and consistence. The last trait is of especial importance, and leads us from the soft juicy *Boletus edulis*, through the leathery species such as *Polyporus squamosus*, of which Mr. Hussey remarked, that "One might as well eat saddle flaps," until at length we arrive at our own *Polyporus Australis*, which is almost as hard as wood. To sum up, *Polypori* are distinguished by the hymenium lining pores on the under-side of the pileus, the hymenium itself bearing basidia, from the extremity of each of which project four naked spores each on a slender sterigma. Further *Polyporei* always grow above ground, either on soil or on stumps, fallen logs, etc., and derive their nourishment from these by means of an assemblage of long slender, white roots, called mycelium. I ought to explain that the mycelium has, in conjunction with the spore another important office, for it is from it that the young fungus springs.

Turning our attention to the *Tuberacei* we find a subterranean tuber, not unlike a potato, apparently without stem, pileus, mycelium or anything else in common with the last order; in fact, the whole plant may be said to be self-contained, for it is surrounded by an outer skin or peridium, and inside it consists of a mass of hymenium, sometimes soft and fleshy as in *Tuber aestivum*, the well known truffle, for which enormous prices are frequently paid in Europe, sometimes hard and horny as in *Mytilitta Australis*. But the greatest difference between the two families is the way in which the spores are produced; in *Polyporei*, I have shown that they are naked bodies borne on basidia, whereas in *Tuberacei* the spores are enclosed in small cells

called asci. Imagine a long transparent bag filled with eggs and reduce the whole immensely as to size, and it will give you some idea of one of the asci under a microscope. In *Mylitta Australis*, the mycelium, hymenium, and asci seem to be mixed up in the most extraordinary way. Having now pointed out the principal differences I shall describe a few of the species that have come under my own observation.

*Polyporus Australis*. This curious species at first appears as isolated patches, which coalesce and form one fungus. It generally appears on decayed logs, but one variety which I forward, only grows on the living trunk of *Pittosporum bicolor*. The other variety sometimes attains to an enormous size. I found one weighing nearly one hundredweight, being four feet long, two feet wide, and one foot deep in one of the Walhalla gullies. The pores are very small and deep. The hymenium completely covering the under surface.

*Polyporus pelliculosus*. Grows on the roots of large gums, generally on the summit of lofty spurs. I always put down this species as belonging to the *Hydnei*, in consequence of its long, hairy spines, but Prof. Cook pronounces it to be a true *Polyporus*. I am still trying to discover another specimen like that of which I send a colored drawing, and which was found by me many years since on the Deep Creek Hill. I would feel deeply grateful if any of our members could send me one. I may say I copied the original faithfully, but unfortunately, was then ignorant of the importance of delineating the way in which the hymenium was spread, therefore the botanical value of the drawing is *nil*, except for identification.

*Polyporus cinnabarinus*. This beautiful little plant is very common on old logs; it may be seen almost in any damp nook, brightening the dark wood with its presence. It is hard, almost woody, the under-surface completely perforated with tiny pores of a bright red color.

*Polyporus Lawrencii*. Rare in this district, found on dead gum trees in very damp spots, pores very large, irregular and deep, penetrating to the testa. It grows in layers one over the other, not unlike masses of honeycomb placed horizontally. Color, brown above, white beneath.

*Polyporus spumeus*. Found at the Deep Creek; unfortunately I have no specimen at hand. Pores very small and deep, grows on logs in damp gullies.

*Boletus scaber*. *Boletus* is the genus of the *Polyporei* which contains most of the edible species, and is the nearest in appearance to the *Agaricini*. Dr. Badham gives *B. scaber* a good character, but Prof. Cook says it is not so popular as *B. edulis*. It grows amongst grass on the top of our hills. Pileus flattish and depressed, color light-brown, darker towards the centre; hymenium hemispherical, except near stipe, which it does not touch; pores deep and large, stem solid, flesh beautifully white and nutty.

*Boletus luridus*. Semi-globular, reddish color, edge uneven, hymenium does not touch stipe, pores when cut are green and rather shallow, stipe thickens towards centre, tapering to each end. I send herewith several specimens of *Boletus* too numerous to describe in this paper.

*Mylitta Australis*. These fungi are very common in Gippsland, but they are difficult to be obtained, as they only grow underground, and leave, as far as I know, no distinguishing mark to show their whereabouts. I say as far as I know, but as Mr. Howitt assures me that they are eaten in large quantities by Aborigines, they may have some way of finding them. Owing to the kindness of Mr. Biggs, of Rosedale, and other gentlemen. I have been enabled to compare those found in flat country, on the sides of hills around Walhalla, and those found on the tableland of Moondara. So far, except with regard to size, I have found no difference. A rough outside pericarp, without the slightest trace of roots, encloses a mass of matter something like boiled sago. This mass, according to Professor Berkeley, is the real hymenium, and certain specialised cells turn into or produce the asci which contain the spores. The way in which these spores are disseminated is as yet unknown, in fact, the whole system of reproduction is at present shrouded in mystery, leaving a wide field of observation open to the aspiring fungologist. During my experiments with the *Mylitta* a curious thing occurred. The weather happened to be very close and damp when I left half a one on the mantelpiece, next morning I remarked a whitish-looking substance oozing through in two places, one portion from what I then imagined to be the stem, and the other from the cut side of the fungus. At first I thought it a kind of mould, and turned down the cut side so as to get rid of one lot at all events, but when I again visited it, the new growth had made wonderful progress, the lower one had actually raised the whole specimen nearly half an inch from the shelf, and the other had developed a regular stem pileus, etc. I then endeavoured to encourage the growth of both, but alas, the large one on the cut side had its shape entirely changed, as may be seen in both drawing and specimen forwarded. There is no doubt of both specimens being veritable *Polyporei*, but I cannot determine their species until I submit them to Prof. Cook for inspection.

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## A COLLECTOR'S TRIP TO NORTH QUEENSLAND.

BY A. W. COLES.

(Read before the Field Naturalists' Club of Victoria, 11th Nov., 1885)

BEING anxious to see the birds of the tropics in their natural state, and also to collect a few of them, my brother, F. G. Coles, and

myself, left Melbourne on the 27th of last May, by the "S.S. Barrabool," bound for North Queensland.

We had a fine run to Sydney, which we reached on the 29th, left again next day, and arrived in Brisbane, where we transhipped into the "Keilawarra" on the first of June, started from there on the 2nd, and after calling at Maryborough, Rockhampton, and reached Townsville on the 9th.

After purchasing a horse, pack-saddle, etc., we started for the bush, and pitched our first camp at Stewart's Creek, which is about ten miles to the south-west of Townsville, and when we had made everything snug for the night, we considered we had fairly started upon our new undertaking, and were really in the midst of the famous tropical birds.

The novelty of our first night under canvas, prevented us from sleeping very soundly, but still we passed a fair night, and at daybreak next morning were up, and after birds.

The country is not very thickly timbered about there, the greatest impediment to walking being a species of sword grass, which grows sometimes to a height of eight feet, and so thick, that you can hardly get through it. The owners of the land, generally burn it down twice a year, but it soon grows again as bad as ever.

The birds we found rather hard to get at, but still before the day was over, we succeeded in shooting a fine specimen of the Plumed Hawk, *Lepidogenys subcristatus*, and three pairs of the Crimson-shouldered Lory, *Aprosmitus erythropterus*, a beautiful bird, in fact one of the handsomest parrots we came across during our trip. With these we returned to camp, and devoted the remainder of the day to skinning and preserving, the bodies of course being carefully put away for stews, in fact during the time we were at Stewart's Creek, we lived upon bird stews and damper, as we could get no bread or meat without walking into Townsville. Damper making of course was new to us, and I regret to say they did not turn out well. At first we burnt them, then they were very doughy, but finally they were a great success, and we got to prefer them to bread. For the edification of future campists I may state that our experience goes to prove that damper laid in the ashes, without covering of any sort turns out best.

During the night it came on to rain, which made things decidedly uncomfortable. Our tent kept out the water very well, so we managed to sleep through it. Our troubles commenced next day though, for as the rain continued, we were unable either to shoot birds or make damper, so had nothing to eat. However during the afternoon it cleared up, and after a little trouble we got a fire alight and cooked a rough sort of tea.

Next day we shot some very good birds, including a pair of Moreton Bay Rosellas, *Platycercus Polliceps*, and three of Leach's

Kingfishers, *Dacelo Leachii*, or as they are commonly called Queensland Jackasses. They are very fine birds and have a most peculiar laugh, not at all like the one we hear around Melbourne. I have stood under a tree and watched them frequently. One will sit almost erect on the branch, with its bill pointing straight upwards, and its tail thrown over its back, and while in that position will make a noise something like the short, sharp bark of a dog: meanwhile its mate will sit on a bough opposite, and leaning forward towards the other, will make a peculiar cackling noise. The best time to hear this laugh, if laugh it is, is just before dark. When the twilight has given place to dusk, and the light foliage of the trees looks dark and gloomy, then suddenly you will be startled by this almost unearthly music, coming from you know not where, and ceasing as suddenly as it began, only to commence again in some other unexpected quarter, till one who was ignorant of its origin would almost think he was encompassed by a legion of evil spirits.

During the early part of the following week, we had more rain, but nevertheless managed to get some very good specimens, including three Sanguineous Honey-eaters, *Myzomela sanguinolenta*, two Red-backed Wrens, *Malurus melanocephalus*, a Western Brown Hawk, *Ieracidea occidentalis*, and a pair of Coucals or Swamp Pheasants, *Centropus phasianus*. This bird is, I believe, a species of Cuckoo; it is generally found in the grass, and when disturbed will fly into the lower branches of the nearest tree, from which it will hop up and up, until it reaches the dense foliage at the top, where it will endeavour to hide until the danger has passed, when it will return to the grass as before. I have several times lost this bird by taking my eyes from it for an instant: as sure as you look away, it will glide from the tree without making the slightest rustle, and as it takes care to keep the tree between, you will rarely see it execute this manoeuvre. It has rather a harsh note, but when mellowed by distance, it may easily be mistaken for the coo of a pigeon, only it is of much longer duration. The flesh is very good eating, so they were very acceptable to us.

After staying at Stewart's Creek about a week, we packed our horse, which, by the way, was rather given to straying, and gave us no little trouble on that account, and started for the Alligator Creek, which we reached after a walk of four hours. We camped there on the ground of Mr. Gilbert, the proprietor of the Alligator Creek Boiling Down Works, who, I may say, was very kind to us, and gave us all the assistance in his power.

The site we chose for our tent was very pretty; it was the top of a long sand ridge, about two miles in length, covered with tropical trees and shrubs of all descriptions. There were the *Pandanus* or Bread Fruit Trees, Wild Plums, a variety of the *Acacia*, and towering above all others, the magnificent Ti-Tree, not at all like

the puny insignificant thing you see down south, but a real giant of the forest with wide spreading branches, giving shade to all around. These are only a few of the trees to be found there, others there were, whose names I could not learn, and then growing over and among them were vines and creepers in abundance. The foliage too is quite different to what we have been accustomed to. You see there no dark green leaves, like those of our Eucalypti, the prevailing colour is a very light green, which I must say looks much more cheerful.

Along this ridge we soon went with our guns, and were not long in securing specimens, such as a Masked Barn Owl, *Strix personata*, an Ibis, *Threskiornis strictipennis*, and several Barred Shouldered and little Zebra Doves, *Geopelia humeralis* and *Geopelia tranquilla*. The similarity between these Doves is very striking, the one really seems a smaller edition of the other, they are marked the same, and so far as I could learn their habits are precisely similar. Their notes are different, however, that of the Barred Shouldered resembling a Cuckoo, in fact it is called the Cuckoo Pigeon in Queensland; while the other has a harsh, guttural note, rather loud for the size of the bird. They are nice little things: I was very fond of watching them strutting about in the grass, picking up the seeds, and I think a good many escaped on that account.

During that and the following week, we worked around our locality with varying success: we had a little rough weather which drove the birds back for shelter, but still we did very well on the whole. Amongst others we secured the Dronga Shrike, *Deurus bracteatus*, a glossy Blackbird, with red eyes, and a fan-shaped tail, two varieties of the Kingfisher, *Macleay's*, and the Rufous-backed, *Halcyon Macleayi* and *Halcyon Pyrrhopygia*, the White-backed Wood Swallow, *Artamus Leucopygialis*, a very pretty bird, and also a smaller variety of the same, which is about half the size and a perfect fac-simile of the other, its correct name I have not yet been able to ascertain.

There are a good many birds in this district that are obtainable in Victoria, for instance the Musk Lorikeet, *Trichoglossus concinnus*, the Little Lorikeet, *Trichoglossus pusillus*, Swainson's Lorikeet, *Trichoglossus Swainsonii*, and the Friar Bird, *Tropidornis corniculatus*, were also very plentiful. We also secured a Bustard, *Otis Australasianus*, and a Southern Stone Plover, *Oedinenus grillarius*, which were exactly similar to their Southern brethren.

After a week or so on the banks of Alligator Creek, we concluded it would be a good idea to try a trip on the water, so obtaining a boat from the schooner "Carrambeenie," which was loading cargo at the works, we started off one morning up the creek. It is a fine sheet of water, about a hundred and twenty yards wide at this part,



and as we were only four miles from its mouth, it was quite salt. The banks being acted upon by the tides, are mud, out of which the mangrove grows to a height of ten or twelve feet, and so thick that it is difficult to get from the water to the shore. Alligators were at one time very plentiful there, and I was assured by the manager that one was shot measuring thirty-two feet, but they have been nearly exterminated. During the whole time we were there, we saw but two, and they took care to keep far enough away.

The bottom of the Creek is composed of mud and sand, without rocks or snags of any kind, so it is a splendid place for boating. We had a fine pull for a few miles, when we had a shot at a flock of ducks, and succeeded in bringing down two: one of them however, only being wounded, got into the mangroves, and although I followed it with the mud above my knees, until I was really in danger of being bogged, and making a meal for an alligator, it escaped. The one we got proved to be the Radjah Shieldrake, *Tadorna radjah*, a very fine bird, and the only one we secured during our trip. The only other bird we shot on the Creek was a Wimbrel, *Numenius uropygialis*, an indifferent specimen. Our Shieldrake however, quite compensated us for our day's work, and we returned to camp tired but satisfied.

During the following week we did some very good work, and bagged specimens of the Bee Eaters, *Merops ornatus*, White-breasted Graucalus, *Graucalus hypoleucus*, Black-backed Crow Shrike, Black-throated Crow Shrike, *Cracticus nigrogularis*, Yellow Honey Eater, *Phalotis flava*, and many others.

After staying between three or four weeks on the sand ridge, as we named the place, we decided to move a little higher up the creek, and spending a week there before finally taking our departure, so packed up, and struck off to the west, and after a walk of a few miles, pitched our tent by the side of a dam, about half a mile distant from Alligator Creek.

As this was the only place where fresh water could be obtained without going a considerable distance, we concluded that birds such as Pigeons, Hawks, etc., would come to drink, and we were not mistaken, for when we turned out at daylight next morning, we discovered two beautiful White-breasted Eagles, *Ichthyophaga leucogaster*, or as they are called about there, White-headed Fish Hawks, by the water's edge. Of course it is one thing to see, and another to shoot them as they are very wary, and on this occasion as on several others, they gave us the double. We made up for our disappointment by shooting some pigeons, which turned out to be of the Squatter variety, and fine birds they are, both for the pot and collection. They are the heaviest birds for their size that I know of, and, of course, we tried a good many during our trip. After skinning these pigeons, we again turned our attention to the eagles, and tried hard

for several days to secure them, but without success; all sorts of schemes were frustrated by their watchfulness. I have myself lain in ambush for half a day, covered up almost with branches of trees, without seeing a sign of one, but no sooner would I leave, than one would swoop down from some spot where it had hitherto been concealed, and after staying a minute to quench its thirst, would dart off again as quickly as it came. Our patience was rewarded finally though, as one evening one was shot amidst great rejoicing. It proved to be a fine specimen, its white head, throat, and breast, showing out in strong contrast to the dark chocolate colour of the wings and back. The feathers are soft and silky to the touch, and are greatly sought after for the manufacture of artificial flies for fishing. This was the only one we succeeded in getting, although we tried hard for them during the remainder of our stay. We got nothing more of importance at the dam, so at the end of a week from time of getting there, again struck tent, and returned to Stewart's Creek, where we camped within half a mile of the spot we first chose on reaching the bush, intending to wait there until the arrival of Mr. A. J. Campbell, a gentleman well-known to most of you, who had resolved to spend a month or two with us in North Queensland.

*(To be continued.)*

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## GEOLOGICAL SKETCH OF SOUTH-WESTERN VICTORIA.

By MR. J. DENNANT, HAMILTON.

*(Read before Field Naturalists' Club of Victoria, 14th Dec., 1885)*

### PART II. UPPER PALÆOZOIC ROCKS.

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A CONSIDERABLE area of ground is occupied by these rocks, but their principal development is to the eastward, where they form extensive mountain chains. As the traveller approaches Dunkeld from the east, he sees the rugged outlines of the Serra Range, culminating in the peaks of Mounts Abrupt and Sturgeon, the first of which reaches a height of 2724 feet. From these peaks on the south, the range extends in a north easterly direction, till it junctions with the Grampians proper at Mt. William, 3827 feet high, being serrated in a most regular manner for the whole distance, about thirty miles. Going through the most southerly pass in the range, with Sturgeon and Abrupt on either hand, another range, the Victoria, is seen, nearly parallel with the Serra, an extensive valley of almost flat country lying between. This range extends in a generally north and north easterly direction for over thirty miles, as far as the banks of the Glenelg. North of this river, however, though much farther to the west, is the Black Range, which maintains

generally the same northerly strike as far as Wonwondah. West of the Victoria Range, and about twenty miles from its most southerly point, is a smaller one, the Dundas, with its highest peak 1535 feet above sea level, and trending towards the north west, while in the extreme north, just on the edge of the Mallee, is the isolated peak of Arapiles, only 1176 feet high, but nevertheless more remarkable perhaps than any other mountain of the whole series. It rises from the midst of an extensive tertiary plain, apparently unconnected with any other elevation, and the observer is surprised to find an old palaeozoic rock in such a situation. The view from its summit can scarcely be surpassed in Victoria, the whole of the variegated scenery of the west being visible from it. Eastward, the horizon is bounded by the serrated chains of the Grampians; to the north and west stretch vast plains, unbroken by the smallest elevation; southward, the numerous lakes of the Wimmera country dot the surface in the foreground, while beyond, the rugged outlines of Dundas contrast strongly with rounded volcanic hills in the far distance.

The ranges mentioned are the principal, but by no means the only ones in this part of the district, for between Dundas and Victoria, other minor chains of low elevation can be traced, and east of the Serra, the Wannon is enclosed for some miles of its course by two parallel rows of hills; in fact, by climbing any one of the principal heights, the wave-like contour of the surface is at once apparent, the undulations running mainly in a north and south direction. Every one of the ranges is precipitous on one side, and gradually sloping on the other. For the Serra, Victoria, and Arapiles, the steep side faces the east, and for the Black and Dundas Ranges, the west. The intervening valleys, however, are not simple synclinal troughs, being broken by those low and now almost obliterated chains of hills referred to. The dip is, of course, towards the sloping side, but varies considerably both in direction and angle. The following are observations made for some of the ranges:—

Mt. Arapiles: dip to W.S.W. at an angle of  $10^{\circ}$ .

Mt. Dundas (summit): dip to N.E. with angle as high as  $30^{\circ}$ .

Serra Range (in the pass between Sturgeon and Abrupt): dip to W.N.W. by N., and varying in angle from  $10^{\circ}$  to  $20^{\circ}$ .

It is thus seen that the dip, and therefore the strike of the Dundas and Serra Ranges, are almost at a right angle, but the intervening range, the Victoria, with the same general dip as the Serra, yet varies somewhat, so that in some parts its direction presents an approach to parallelism with that of Dundas, and these two ranges may be the extremities of a great synclinal curve. In the ranges which I have examined, no sign of an anticlinal fold is visible, all breaking off abruptly on the steep side. Standing on the top of Dundas and looking west, no other hills can be seen,

and yet the descent beneath is almost perpendicular for hundreds of feet, and concerning Abrupt and Sturgeon precisely the same thing may be said, if one faces east instead of west; in the case of the latter mountains, immense basaltic plains commence from their very base, no further outcrop of sandstone strata occurring to the east in that part of the colony.

It is necessary to remember that both the two generally parallel ranges, Victoria and Serra, have their steep sides facing the east, and yet they are only separated by ten or twelve miles of flat country, so that when their low angle of dip, ( $10^{\circ}$  to  $20^{\circ}$ ), is taken into consideration, it is evident that neither anticlinal nor synclinal curve could ever have existed between them, and one is therefore forced to the conclusion that the intervening valley is mainly one of denudation, and that both ranges were originally connected, forming part of one mighty mountain chain. It is probable that atmospheric degradation first commenced in the joints of the rocks, or along some great lines of fault. The whole series is very much jointed, and on this account the ranges wear away rapidly, not only on the bold rocky escarpments of their steep sides, but also on their opposite or sloping ones, producing great cracks and fissures, which in the course of time will widen out into deep gullies, bounded on either side, as the Victoria Valley is, by parallel ranges of hills, both dipping in the same direction. The actual amount of denudation must have been enormous, for undoubtedly all these ranges were at one time very much higher than they are now, how much higher can only be estimated by a series of the most careful observations.

The rocks throughout the whole formation are of an eminently sandy nature, and generally coarse grained, in some places being much harder than in others, as at Mt. Arapiles, where they are of a highly silicious character, and extremely hard. In all the ranges, quartz pebbles are abundantly scattered throughout the rock masses, and on a few of the heights, well developed, though small, crystals of quartz may occasionally be found. In many places, especially in the Victoria Range, the rocks split very readily, furnishing excellent materials for flagging, &c. Owing to the iron which most of the rocks contain, they have generally a rusty, stained appearance, but in some localities this ingredient is wholly absent, and then they are of a white colour, and if fine enough in grain, pass into a beautiful freestone. This is the case at the base of Mt. Abrupt, where quarries have been opened, from which a most valuable building stone is obtained. The handsome spire of the Anglican Church at Hamilton is constructed of this stone, and after many years of exposure does not show the slightest stain of iron oxide. The stone, I am told, is easily worked when fresh from the quarry, and as it exists in inexhaustible abundance, at a distance of only three

miles from a railway station, it ought in the future to be largely used in the principal public buildings of Victoria.

Near Balmoral, there is an outcrop of the rock, very hard and coarse in texture, but of a pure white color, and so much resembling limestone in appearance as easily to deceive unpractised eyes. One individual actually went to the expense of quarrying the stone and burning it, expecting to get lime for building purposes, but he was considerably astonished to find on opening his kiln, that his stone, instead of being soft and powdery, was harder than ever, and covered with a glaze like that on earthenware.

So far, no trace of any fossil remains has been discovered in these rocks, though search for them has been made; their generally coarse texture is certainly not favourable to the preservation of plant impressions, and throughout the whole extent of the formation there does not appear to be a single band of limestone. It is manifestly difficult to judge of the age of a formation showing no fossils, and accordingly that of the Grampian strata is not known with anything like certainty. They are underlaid immediately by the silurian rocks mentioned in the preceding chapter, while above them is a deposit, regarded as Mesozoic (oolitic) from fossil evidence, but though the Grampian rocks must thus be younger than the silurian, and older than the secondary formation, there is a wide gap between two such extreme groups of strata, and the exact position of the Grampian sandstones in the geological series remains a problem, which must, I think, be left for further research to solve, their classification as Upper Palaeozoic, at the head of this article, being only provisional. Mr. Selwyn has referred strata, that he considers similar, at Bacchus Marsh, Mansfield, &c., to a Devonian age, owing to the plant impressions they contain. The late Rev. W. B. Clark also inclined to the opinion that the Grampians resemble the Devonian, or Old Red Sandstone of Europe, more particularly, as like these, they are associated with masses of quartz porphyry.

Although the ranges I have quoted are the only ones now to be seen in this district, there is evidence of the formation having had a much greater extension in former times. From Arapiles to the South Australian border is now a vast plain, but at Mortat, about twenty-five miles west of this mountain, exactly the same kind of stone is found just below the surface, and has been quarried for building purposes; again at Mooree, fully thirty miles N.W. of Dundas, Grampian sandstone appears in a well-marked bluff, while farther west still, in the midst of a sandy area near Kadnook, a slight outcrop of the same stone is again noticeable.

These patches of rock however are not after all quite so isolated as they appear to be at first sight. If the traveller crosses the country in a westerly direction either from the Black range, the Dundas,

or Mt. Arapiles, at every few miles he will come across a band of sandy, sterile country, known locally as "the scrub," and contrasting strikingly with the intervening fertile areas. In the county of Lowan, these desert strips of land are particularly well marked, running in a generally north and south direction for many miles, nearly parallel with each other. The sand in them is very heavy, especially in places, where it seems to be heaped up in extensive mounds, looking in the distance like walls of sand, to the dismay of the unfortunate traveller who has to pass over them. The parallel lines are on the whole, continuous, few breaks occurring, though at intervals the sand becomes much lighter.

The vegetation is of the scantiest, and confined to dwarfed, straggling, stringy bark trees, and stunted, almost leafless shrubs.

When in the midst of such a lonely, dreary region, it is difficult to realise that not far off, a complete change in the character of the country takes place. Such is the case, however, and the desert bands are bounded by areas of rich agricultural land, the value of which is well shown by the fact of its being all selected and cultivated while the scrubs are unoccupied and neglected. If the county map of Lowan, showing in colour the land selected, is examined, the extent and direction of these sandy wastes can easily be made out, by the parallel blanks which occur, the colored portions being the good land, and the blank strips the scrub. On going once from Spring Hill to Maryvale, I crossed one of these belts of scrub, and the scene was so desolate and the sand so heavy, that I could scarcely believe it possible that I had taken the right road. Suddenly, however, I came into a well-grassed, fertile region, with farm houses here and there visible—in an hour more, I was again struggling through the sand of another and exactly similar wilderness.

Starting from the Mallee fringe, and going southwards to the Glenelg, the roads keep these sandy tracts almost all the way, having been marked out in the first instance by the early settlers, who, when going for supplies, preferred the sand in the winter, as they thus avoided the boggy, crab-hole ground on either side.

On the whole, these sandy belts are elevated slightly above the adjoining country. This may be remarked of a ridge running south from Mortat, of another a few miles to the east, and of a third in a line with Mt. Arapiles. Between this last mountain and the Black range, north of the Glenelg, and also between the Dundas and Victoria ranges south of this river, similar sandy strips are met with. In the last mentioned locality however, they are easily accounted for, as sandstone rock crops out in their midst. In the county of Lowan this is not often the case; in the Mortat line, the sandstone is below the surface; in the Mooree and Kadnook lines it is visible above it, though only to a slight extent. That the

sandstone of the ranges is liable to degradation and entire removal is apparent at Mt. Arapiles, where one large portion of the mountain has become detached, and now forms a separate rock mass, well known under the name of the Mitre Rock, from its resemblance to a bishop's mitre, and between this and Arapiles proper, the main road from Horsham to Spring Hill now runs ; to say that it is a sandy one is unnecessary. Other smaller portions of Arapiles have also broken off from the main mass, and it is clear that in a comparatively short time, geologically speaking, nothing will be left of it but a line of sandy ground ; the mountain itself is undoubtedly a mere fragment of what it once was, the greater part having crumbled completely away. A study of what is taking place in this miniature range, so diminished by the degradation of ages as to be now little more than an isolated peak, is very instructive. It is itself in the line of one sandy strip of country, while both east and west of it other similar bands occur parallel with it, in some of which actual sandstone rocks crop out ; it is moreover far removed from any other considerable mass of sandstone, being left, as it were, an outlying monument of mountain chains, now all but obliterated. This is not a mere figure of speech, for it may, I think, be safely concluded that the meridional sandy belts of Lowan and the adjacent counties are simply the remnants of formerly existing parallel ranges of sandstone hills, which in the lapse of ages have become entirely disintegrated ; we are able thus to contemplate a period in the geological history of the region when the Grampians extended much beyond their present limits, and included at least three other distinct lines of hills lying more to the west than any of those now remaining.

Whether these obliterated ranges were ever as high as the present ones may be doubted. The evidence is against their having been so, as there seems to be a gradual lessening in height towards the west, the Serra, in the extreme east, being the highest.

If the ranges were upheaved in successive earth waves, it is easy to suppose that the disturbing force producing them was at its maximum in the neighbourhood of the Serra, and gradually diminished in intensity towards the west, till it ceased altogether.

I have hitherto made no reference to the submergence of much of the land in this province during tertiary times, but there is ample evidence to show that such was the case to a considerable extent throughout the counties of Follet and Lowan, marine shells of this age having been found not very far below the surface in many parts, close up to the margins of the lines of sand. I have not heard of shells being discovered beneath the sand, and I do not think it at all likely that they will be found there, except in isolated localities. The submergence was only partial in Lowan, ridges of sandstone hills having always remained beyond the reach of the waves.

On the flanks of Dundas, Victoria, and Serra, no fossils are

found, and these ranges were certainly not submerged in tertiary times, nor indeed was Arapiles itself, though it must have been surrounded by the miocene sea, which was there but a shallow one, not extending to the ranges south and east of it. The near proximity of the sea is made manifest by the finding of miocene shells at a distance of only three miles from this mountain. During the sinking of a well on Mr. J. Keyte's farm, on the eastern side of Arapiles, perfect miocene fossils were met with at a depth of seventy feet, amongst which were *Voluta anti-cingulata*, small cowries, and other shells similar to those of the well-known miocene beds in other parts of Victoria. Again, in the neighbourhood of Harrow, at Tea Tree Creek, on the margin of a belt of scrub, casts of *Cucullæa Corioensis*, *Cypræa platypiga*, and numerous other tertiary fossils occur in iron stone lying on the surface of the ground.

The areas in which tertiary fossils are abundant, are thus separated by sandy strips of non-fossiliferous country, and the inference may, I think, be fairly drawn, that these last represent the sites of ancient ranges which were never entirely sunk beneath the waves of the miocene sea. They were most likely actual lines of low sandstone hills rising above the waters, and forming long, narrow, rocky islands and peninsulas on the margin of the old coast line, which was probably not far from the present Black range on the east, and the table-land of Dundas on the south. This table-land, from which rises the Dundas range, must then have overlooked a wide expanse of water to the north, west, and south of it. Farther west, there would be a gradual deepening of the ancient sea, as is shown by the thickness of the limestone beds as the South Australian border is reached. The Rev. J. T. Woods, in his "Geological Observations," thinks that an arm of the sea formerly divided what is now the continent of Australia into two parts, and that the Gulf of Carpentaria was then connected with the Southern Ocean. The portion of Victoria now under consideration would, of course, be its south-eastern boundary, a view which accords thoroughly with the position of the fossil beds occurring in it.

The relation of these to the old shore line will be more fully treated of in the sequel, under the head of "Tertiary Rocks."

The waters of the miocene sea would doubtless undermine and carry away a great part of the sandstone cliffs of the islands and peninsulas, which, I have said, skirted the coast line, but after the upheaval of the land had taken place, chains of hills still remained untouched by the waves. These however, were subsequently so completely worn down by the degrading action of the atmosphere, as to leave nothing but non-fossiliferous strips of barren sand to mark their former existence.

Such is the theory which I venture to propose to account for most of the sand in this part of the colony.



Some of it has, however, a different origin, as at Dergholm and the surrounding area, where it arises from the decomposition of a very coarse granite, bosses of which are in many places still left standing. But this sand does not run in lines at all, but extends rather in great patches, often of considerable extent; moreover, it has a different appearance, and when examined is seen to contain somewhat large rounded grains of felspar (orthoclase). It does not produce such a hopelessly barren soil as that found in the long, parallel belts of Lowan, and the vegetation is consequently somewhat superior.

Again, in the southern parts of Follett and Normanby, true sea sand is met with, the origin of which may be distinctly traced to agencies now in operation on the sea shore, where great quantities of sand have been drifted up by the waves of the Southern Ocean, forming sand dunes all along the coast. By the gradual upheaval of the land in the south of Victoria (which is still in progress), successive lines of these dunes have been left, and are traceable still for many miles from the present coast line. This sand is of a highly calcareous nature, consisting largely of broken shells, and it is thus much more fertile than the sand of the more northern areas.

The three classes of sand which I have mentioned, are thus actually in different parts of Western Victoria, but as the regions in which they severally occur are almost continuous, they have been confounded by the casual observer, and the mistake made of assigning to them a similarity of origin. A few feet below the calcareous sand, limestone may almost always be found, but in the Lowan belts this is never the case, while in the Dergholm district, granitic rocks are seldom far away.

The description of these sandy beds does not of course belong to the subject of this chapter, but it was necessary to refer to the Lowan belts, when discussing the Grampian sandstones; the other recent deposits alluded to will be more fully described later on.

In a few places, the Grampian sandstones are associated with basaltic rocks, but except in one locality without suffering any alteration. This one exception is, however, such a geological curiosity as to merit special notice.

On the road from Mooree to the Koolomert home station, and near the sandstone bluff before mentioned, a quarry has been opened on the side of a steep hill, and though the rock is simply a coarse, granular sandstone, it is everywhere prismatic. The rock has not been at all hardened or altered in any way, and with the exception of its prismatic outlines, exactly resembles the ordinary sandstones of the Grampian series.

The prisms, which vary from one to eight inches in diameter, are four, five, and sometimes six sided, and as regularly shaped as if they had been dressed by the stonemason's chisel. They stand

perfectly upright, and extend in unbroken columns as far as the depth of the excavation allows them to be seen. This is only about eight feet, but they probably remain entire for a long way down. They are so loosely held together as to be easily separated, and by means of a pointed bar of iron, I was able at a recent visit to obtain some beautiful specimens, a few of which have been sent to the Technological Museum, Melbourne.

Cropping out on the top of the same hill are basaltic rocks, showing no prismatic forms, but as they have never been quarried, no opportunity is afforded of examining them deeper down. Not very far away, however, in a dome-shaped volcanic hill a quarry exists, and there the lava is roughly prismatic.

Whether the basalt of the Koolomert hill is prismatic or not, at a greater depth, the volcanic outflow has certainly induced that structure upon the neighbouring sandstone to an eminent degree.

In the heart of the Victoria Valley, between the Serra and Victoria Ranges, is a considerable body of porous, amygdaloidal lava, but no crater is discernible from which it has flowed, the country being perfectly flat.

On the east and south of the Serra, basalt comes close up to the base of the ranges, the only separation being the River Wannon, which for miles of its course has basalt on its left bank and sandstone on its right. The assertion has been made by some that the basalt crosses the Wannon from the north, near Dunkeld, proceeding from a hill lying between Mounts Abrupt and Sturgeon, but this is entirely wrong, that hill known locally as the "Picaninny Mountain" being wholly composed of sandstone. The source of the volcanic rocks in the neighbourhood of Dunkeld, is doubtless Mt. Rouse, an extinct volcano eighteen miles to the south.

Along the flank of the Dundas Range, and in the syndinal valley of Victoria and Dundas, is a remarkable outcrop of felsite porphyry. It is first seen about twelve miles south from Balmoral, and extends in a generally south direction as far as the Grange Creek, near its junction with the Wannon, more than twenty miles. It is, of course, not visible for the whole of the distance, but may be easily traced by its occasional appearance on the surface. At Nigretta, the passage of the River Wannon over the porphyry has formed a splendid waterfall, one of the most picturesque sights of the western district.

The rock presents the same appearance wherever seen, allowing for slight differences in the oxidation of the small amount of iron contained in it, and for the greater or less weathering it has experienced. In a felsitic base, are scattered macroscopic crystals of quartz and orthoclase felspar, the quartz in well marked hexagonal forms, and the felspar in long stoutish prisms. It is not connected

with granite, as is often the case with this rock in other parts of the world, for though there is granite not far from it in the north, there is none in any other part of its outcrop; it is probably an independent igneous rock, but whether it was formerly overlaid by more basic lavas cannot now be determined. It is, at any rate, of very ancient date, and has undoubtedly been greatly denuded. About Cavendish, and thence on to the Grange Creek, it is frequently covered by doleritic basalts, probably pliocene, but in the bed of this stream other sets of strata intervene between the basalt and the porphyry. These are the celebrated Muddy Creek beds, of miocene or oligocene age, and an actual junction of the two formations is plainly visible. Above is the limestone, crowded with fossils, while immediately underneath is the porphyritic trap. It is very much older than the limestone, for not only is this last wholly unaltered, but must have been laid down on the trap after the removal of all the upper portions of the original volcanic or plutonic deposit, of which in all probability, the porphyry is merely a remnant; this means an immense amount of denudation, which would require extended periods of time for its accomplishment.

The junction of the trap rock with the Dundas sandstone cannot be clearly made out, owing to the quantity of débris at the foot of the range, but my observations do not show the least sign of any alteration where the two formations meet, and at the foot of Mt. Melville, (a peak of the Dundas chain), one is very near the actual junction, which is concealed only by such a narrow sandy belt, that it is possible to pass from porphyry to sandstone within a few yards, so that, if any alteration of the sedimentary rocks had been produced, it could scarcely escape notice.

The precise age of the trap formation is doubtful, the only definite conclusion which can be arrived at being that it certainly antedates by a long period the tertiary era—further research is, I believe, likely to throw considerable light on this interesting question.

The granite which was mentioned just now as occurring to the north of the porphyry, is at some distance from the existing main ranges, but near it, there is an existing outcrop of very ancient looking, and probably metamorphic strata. The chief locality in which these rocks are developed is Frenchman's Creek, a small stream entering the Glenelg a few miles to the east of Balmoral after a northerly course of about ten miles. The beds are eminently micaceous and gneissose, the mica being always muscovite of a glistening white colour. Plates of this as large as the palm of the hand are common, and so abundant is the mica generally in the formation, that the roads in the neighbourhood sparkle in the sunlight, as if strewn with jewels. Pure white quartz, either amorphous or crystallized, jasper, agates, and clearly cut crystals of orthoclase feldspar, as well as specimens of pegmatite, or graphic granite, are

found in the bed of the creek, while on its banks, the rocks from which these minerals are derived show a stratified as well as crystallized structure.

Their dip, as observed in one or two localities, is to the W.S.W., at an angle of about  $50^{\circ}$ , which would make their strike N.N.W. to S.S.E. The strata, in which the dip was taken, consist of micaceous sandstone, much altered and highly laminated, but never in the slightest degree slaty.

They lie in the trough between the Victoria, and the Dundas and Black Ranges, and are in fact, not very far from the remains of one of the almost disintegrated ranges, which I have said earlier, are found running parallel with the Victoria Range, while on the northern bank of the Glenelg, almost opposite to the Frenchman's Creek, are low hills of hard white sandstone. The connection of the gneissose rocks with the prevailing sandstone of the region is thus very close, and this, taken in conjunction with their silicious nature and general strike, enable us with some confidence to regard them simply as strongly metamorphosed lower beds of the Grampian sandstone group.

This view was partly adopted by Mr. Selwyn in his "Geological Notes" of 1866.

The metamorphism is clearly due to the contiguous granite, as similar rocks are never found at any distance from it. The granite is a fine grained and very beautiful one, and as it covers a tolerably wide area, it will probably be used at no distant date for ornamental purposes. It sends out strings and veins to the west and south, but these are composed of coarser materials, and look so much like a syenitic granite, as to have been sometimes so classed. It is a simple granite, however, consisting of flesh-coloured orthoclase, a blackish quartz, and good sized crystals of biotite mica, hornblende being absent.

It is this coarse-grained granite which I have mentioned as being responsible for much of the sand in the vicinity of Dergholm, and its connection with the ordinary fine-grained variety at Harrow and Balmoral can be made out without much difficulty, as the outcrop of the rocks is traced westwards.

In the geological map of the colony, the presence of granite is noted in the Victoria valley, between the Serra and Victoria ranges, not only towards the northern but also towards the southern end, and in the exact spot where I have indicated the presence of doleritic lava. After traversing the valley for a distance of over twenty miles I have not been able to find a single trace of granite rock in it. For the extreme north I cannot speak from personal observation, but residents who know that part of the valley well, assure me that it does not exist even there.

*(To be continued.)*



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**CONTENTS:**

|                                                                                 | PAGE |
|---------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                      | 125  |
| Oology of Australian Birds. By A. J. CAMPBELL.<br>(Supplement. Part II.) ... .. | 126  |
| Collector's Trip to North Queensland. By A. W. COLES.                           | 130  |

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## THE FIELD NATURALISTS' CLUB OF VICTORIA.

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THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 18th January, 1886.

Mr. T. A. Forbes-Leith, vice-president, occupied the chair, and about fifty members and visitors were present.

The hon. librarian acknowledged the receipt of the following donation to the library:—"Proceedings of the Linnaean Society of New South Wales," Vol. X., Part 3, from the Society.

The hon. secretary read a short account by Mr. C. French, F.L.S. of the Club excursion to Cheltenham on the 16th inst. The day was very oppressive, and only about ten members were present. The principal plants noted in flower were *Cakile maritima*, *Lobelia anceps*, *Alyxia buxifolia*, and the orchid, *Dipodium punctatum*. Insects were scarce, but the beautiful buprestid, *Cyria imperialis*, also *Stigmodera sanguinipennis*, *S. variabilis*, and *S. sp.* were taken.

The following were elected members of the Club:—Mrs. J. Stirling, Messrs Pickerling and St. John Topp, and Mast. Geo. French.

Mr. F. Reader forwarded a note respecting the paper on Fungi by Mr. Tisdall, published in the January *Naturalist*. He made the following criticisms on Mr. Tisdall's paper, (1) That the spores of Fungi are not always oval or round, but present considerable differences in form, (2) That it is undesirable to apply the same term "family" to such unequal groups as the Sporiferæ and Polyporei, and (3) That the term "pericarp" should be excluded from cryptogamic descriptions.

Papers read:—The hon. secretary read for Mr. I. Batey of Sunbury, the second part of his paper, "Notes on the Habits of our Native Birds." This part was devoted to cockatoos and magpies, and the writer's account of these birds, caused some discussion, with some interesting remarks from Rev. C. M. Yelland.

The popular style in which the paper was written was apparently appreciated.

Owing to the unavoidable absence of Dr. Dobson, Mr. Topp, and Mr. Reader, their papers were postponed for a future meeting.

The following were the principal exhibits:—By Mr. F. G. A. Barnard, coleoptera collected recently at Pakenham, the Plenty River, and Beechworth, also photographs of the Lal Lal and Moorabool Falls, the scene of the recent excursion; by Mr. D. Best, coleoptera collected during the season; by Mr. G. Coghill, recent collections of icoleoptera; by Mr. J. E. Dixon, forty species of coleoptera collected during December; by Mr. T. A. Forbes-Leith, a pair of Ka-Kas or Hill parrots of New Zealand, (*Nestor Meridionalis*); by Mr. C. French, F.L.S., two rare humming-birds, *Topaza pella* from Cayenne, and *Cometes phaon*, from Andes of Balivia; by Mr. E. H. Hennell, coleoptera from North Queensland; by Mr. F. Reader, Victorian lycopods and selaginellas; by Mr. J. F. Roberts, the moth orchid of Java, (*Phalænopsis grandiflora*); by Mr. F. Spry, micro-lepidoptera from the Grampians, and part of the core from a diamond drill, consisting of slate with fossil impressions, from Stawell; by Mr. A. Thie, specimens of rubies, sapphires, and other precious stones; by Rev. C. M. Yelland, a young saw-fish caught at Brighton.

After the usual *conversazione* the meeting terminated.

## OOLOGY OF AUSTRALIAN BIRDS.

By A. J. CAMPBELL.

### SUPPLEMENT. PART II.

(Read before Field Naturalists' Club of Victoria, 14th Dec., 1885)

ANOTHER season has passed, but not without additions to Australian oology, and on account of my own excursion to North Queensland in early spring, a little new information has been gathered. With regard to ornithological news in the vicinity of Rockingham Bay alone—a district very rich in birds—in two months I identified over 150 species out of a possible 300. I noticed in that locality our common Kingfisher, or Laughing Jackass (*Dacelo gigas*), and a variety of Pennant's Parrakeet (*Platycercus Pennantii*), which have not been previously reported above Wide Bay district and the Richmond and Clarence district respectively; also the Pale-headed Parrakeet (*P. Pallidiceps*), hitherto doubtful in that locality, and the Rufous-fronted Fantail, (*Rhipidura rufifrons*.) The Uniform-colored Honey-eater (*Ptilotis unicolor*) which has only been reported from the Port Darwin and Gulf of Carpentaria districts was also seen. Coming more immediately to oological matters, it might have been more profitable

had I deferred my visit to tropical Australia a month or two later, because I ascertained afterwards, the majority of birds breed late in Spring or early Summer, but owing to the exceedingly mild climate and having regard to the rain seasons, birds may be found breeding at all times of the year. The government recognised that fact in legislating for the protection of certain native birds, by proclaiming close periods for Winter breeders, Autumn breeders, Autumn and Winter breeders and Spring and Autumn breeders. However, I was enabled personally to take the interesting nests and eggs of *Ptilotis flava*, *P. unicolor* and *Sittella leucocephala* all new to science. The Obscure Honey-eater (*Myzomela obscura*) was seen building in the mangroves in August, and the dissection of a female Rifle-bird (*Ptiloris Victoræ*) at the beginning of September proved its breeding season had commenced, yet a most persevering search, in the scrubs on Barnard Islands where this rare and lovely bird is tolerably abundant, failed to reveal its nest. It was also reported to me that about Christmas time the Queensland Edible Swifts (*Collocalia terræ-reginæ*), breed in numbers in certain caves in the mountains near Dalrymple's Gap. In the proper season what a mighty paper would a trip to these caves make. I throw out the hint to my young energetic oological friends. These caves are also reported to be the abode of numberless bats, and no doubt like the wonderful birds' nest caves at Gormanton, North Borneo, troops of bats would be seen leaving the caves every evening with flocks of swifts in-coming, and *vice versa* in the morning, while from some commanding rock or tree hawks would swoop down into the mass and strike at whatever was most convenient, bats or birds. The following are descriptions of new eggs:—

16. *ASTUR RADIATUS*. (Radiated Goshawk.) Locality,—Queensland, New South Wales, and Interior. Egg,—Roundish in shape, surface somewhat rough and of a uniform dull or bluish-white color; length, 2 inches  $1\frac{3}{4}$  lines; breadth 1 inch  $9\frac{3}{4}$  lines.

Mr. George Barnard, of Duaringa, kindly allowed me to describe this rare hawk's egg from his collection. He states that the clutch was two eggs which were taken from a stick nest lined with leaves, &c., situated in a lofty eucalypt.

254. *BATHILDA RUFICAUDA*. (Red-tailed Finch.) Locality,—Queensland, New South Wales, and Interior. Egg,—White, longish in shape; length, 8 lines; breadth 5 lines.

264. *PŒPHILA CINCTA*. (Banded Grass Finch.) Locality,—Queensland. Egg,—Soft white, roundish in shape; length 7 to  $7\frac{3}{4}$  lines; breadth  $5\frac{1}{2}$  lines.

This pretty finch has a fondness for building underneath the broad hard leaves of the Spiral Pandanus tree, where it constructs its grassy nest to deposit 4 or 5 eggs.

76. *ARTAMUS ALBIVENTRIS*. (White-vented Wood Swallow.) Locality,—Queensland. Egg,—Like that of *A. leucopygialis*, with markings generally stronger in colour. Ground color whitish or warm white, marked principally round the upper quarter, with blotches and spots of umber or reddish-brown intermingled with obscured grey markings; length  $10\frac{1}{2}$  to 11 lines; breadth 8 lines.

317. *PTILOTIS FLAVA*. (Yellow Honey-eater.) Locality,—Queensland. Egg,—Warm white, marked about the apex with blotches of pinkish-red of the same character of color as that generally found on eggs of the *Maluri* (Superb Warblers.) Some of the markings are confluent; a few spots also appear here and there over the other portion of the shell; length  $10\frac{1}{4}$  to  $10\frac{3}{4}$  lines; breadth  $6\frac{1}{4}$  to  $6\frac{1}{2}$  lines.

On the 22nd September I discovered the nest of this lively and beautiful Honey-eater in an orange tree in the Acacia Vale Nurseries, Townsville. The nest contained a pair of eggs and was composed of bark, grass and spiders' old nests and lined with fine grass.

322. *STOMIOPERA* (*Ptilotis*) *UNICOLOR*. (Uniform-colored Honey-eater.) Locality,—North Australia and New Guinea. Egg,—Ground-color white with a faint pinkish tinge, with large blotches and spot of beautiful pinkish and purplish red; the markings being well distributed but inclined to congregate around the upper quarter; length  $11\frac{1}{4}$  to  $11\frac{1}{2}$  lines; breadth  $6\frac{1}{2}$  to  $6\frac{3}{4}$  lines.

The day following the discovery of the Yellow Honey-eater's nest I discovered this other new one, which however, was much larger, being thickly constructed of grass, externally coated with fine strips of Melaleuca bark and spiders' nests. It was suspended by the rim to a forked twig of a small thickly foliated tree at Stuart's Creek. The nest contained two eggs. Previously I found a nest with a pair of fully fledged young.

352. *MELITHREPTUS MELANOCEPHALUS*. (Black-headed Honey-eater.) Locality,—Tasmania. Egg,—Of a flesh color, with a darker shade of the same color round the upper quarter where are also distributed markings and spots of yellowish and reddish brown, in some cases the yellowish red is substituted by purplish red; length 9 lines; breadth 6 lines.

Much interest is attached to this little bird because its nest was last discovered and now completes these of all the Honey-eaters known to Tasmania. At a meeting of the Royal Society of Tasmania, November 1884, "Mr. E. D. Swan drew attention to an extremely rare nest and eggs of the Common Blackcap (*Melithreptus melanocephalus*), which had been taken at Austin's Ferry, Bridgewater, and presented to the museum by Miss A. Brent, Roseneath. Although the bird was one of our commonest, and various rewards offered for the eggs, Mr. Swan stated this had been the first egg as yet obtained. The nest taken in November is composed almost entirely of wool, though a few pieces of moss,

stringy bark, and cobwebs are also used. It is cup-shaped, two inches in depth, and two in breadth on the inside, while externally, the measurements are one inch more each way. It was suspended by the rim to the small branch of a lofty gum-tree (*Eucalyptus*). where from its situation it was very difficult of detection."

374. *SITTELLA LEUCOCEPHALA*. (White-headed Sittella.) Locality,—Queensland, New South Wales and Interior. Egg,—Rounder and smaller than that of the better known *S. chrysoptera*. Ground-color of a faint greenish tinge, rather boldly marked all over with various shades of Chinese ink and slate color. In some specimens the markings are inclined to congregate round the centre and are intermingled with a few spots of dark olive. Two clutches of two eggs each furnished the following dimensions:—(1) 7 x 6 $\frac{1}{4}$  lines; (2) 6 $\frac{1}{2}$  x 6 lines.

This Sittella's nest, in common with its species, is wonderfully made and cunningly placed in an upright fork of a dead limb. The specimen now being described is in a forked branch of a Brigalow tree, (a species of *Acacia*.) It is lined with soft, silky material such as cocoons, bark, &c., and externally there is felted on, with cob-web or other sticky substance, little pieces of bark assimilating the color of the bark on which the nest is placed, giving the nest, at a short distance, the appearance of merely an excrescence of the tree, thus rendering its detection a great difficulty, or a mere matter of chance. The one under notice was discovered by the bird's own actions. Inside measurement of the nest is 1 $\frac{1}{2}$  inches across the mouth, by 1 $\frac{1}{4}$  inches deep. The White-headed Sittella breeds in October.

445. *TRICHOGLOSSUS CHLOROLEPIDOTUS*. (Scaly-breasted Lorikeet.) Locality,—Queensland, New South Wales, and Interior. Egg,—White; length 11 $\frac{1}{2}$  to 12 lines; breadth 9 $\frac{1}{2}$  to 10 $\frac{1}{4}$  lines.

467. *LOPHOPHAPS PLUMIFERA*. (Plumed Bronze-wing Pigeon.) Locality,—North and South Australia and Interior. Egg,—White, of the usual shape; length 1 inch; breadth 9 $\frac{1}{2}$  lines.

494. *CASUARIUS AUSTRALIS*. (Australian Cassowary.) Locality,—Northern Queensland. Egg,—Of a graceful elliptical form, and is superficially like shagreen or rough American cloth, but not quite so rough as the Emu's egg. General appearance,—In color a beautiful pea-green, but if examined critically, the raised, rough particles of the shell will only be found to be green, while the minute interstices are greenish white; length 5 $\frac{7}{16}$  inches; breadth 3 $\frac{13}{16}$  inches.

The above description is taken from a handsome pair of eggs exhibited by Dr. Lucas at the last meeting. The Cassowary eggs are of great interest, not only for their great beauty, but being the largest of all Australian eggs. The Cassowary inhabits the dense tropical jungles between the Herbert River and Cape York Peninsula. The nest is generally placed near the base of a large tree in the great

scrubs, and consists of a heap of sticks, leaves, and other *debris*. A set of eggs is from 4 to 6, generally the latter, which are laid in September, the young making their appearance the following month. The Cardwell aboriginals call the bird "yun-gun," or in pigeon English "big fellow chookie-chookie."

525. *TRINGA CANUTUS*, (Knot.) Locality,—New South Wales and Victoria. Egg,—Color, light pea-green, closely spotted with brown in small specks about the size of a pinhead; length 1 inch  $1\frac{1}{4}$  lines; breadth 1 inch.

The asserted discovery of the egg of the Knot was by Lieut. Greely, late Commander of the United States Expedition to Lady Franklin Sound. The discovery is announced in the July number of the *Auk*, the American ornithological journal by Dr. Hart Merriam, the Secretary of the "American Ornithological Union." He says, "Lieut. Greely writes me the specimen of the bird and egg were obtained in the vicinity of Fort Conger, lat.  $81^{\circ}.44'$  North." The Doctor does not state however, whether the egg was preserved, but it is to be feared it perished in the midst of the Lieutenant's sufferings.

"Although the Knot is found in suitable situations all over the world, it is a curious fact that until so recently its breeding quarters remained a mystery. Of course, the bird is only a migrant to Australia. I have more than once been chided with reference to including in Australian Oology birds that breed in foreign lands, and which are only visitors. But I think if the habitat of these birds is recognized as extending to Australia, our oology would not be complete if it did not contain a description of their eggs, whether such birds breed under the Equator or beyond the Arctic Circles.

## A COLLECTOR'S TRIP TO NORTH QUEENSLAND.

By A. W. COLES.

(Read before the *Field Naturalists' Club of Victoria*, 11th Nov., 1885)

(Continued.)

While in this locality we had a fine opportunity of observing the manners and customs of the aboriginals, as there was a camp within a short distance of us, and as they are so near town they are not disposed to attack you. They are really a disgusting lot of creatures, in fact it is hard sometimes to think they are human beings at all. Their *Wegumjas*, as they call their very primitive dwellings, are wretched habitations, in fact it is a wonder to me how they exist in them at all. Their death-rate is, I believe, very high, especially among the infants, and it can easily be accounted for. When in their wild state, they erected much better dwellings, and lived altogether in a much better style. Instead of the men lying about all day and

sending their Marys, as they call their better halves, to beg or steal whatever they come across, they were out hunting and fishing, occupations which certainly tend to the preservation of health, better than lying on their backs all day, as they seem to do now. Towards evening they get a little lively. One afternoon we got a party around our camp, and after promising them "patter," as they call food, and putting the billy on the fire, set them to work throwing boomerangs, etc., and we were surprised at the skill they displayed. That seems to be the only occupation at which they shine, but they certainly do deserve credit for the way in which they handle their weapons. Their boomerangs will circle around a tree, from right to left, and from left to right, with a speed almost incredible, and will return almost to their feet. The way in which they use their nulla nulla too, is surprising. They have two styles of throwing it, one under-arm, when it leaves them with amazing force, and travels large end first towards the object it is destined to hit, the other over-arm, the weapon in this case being first balanced on the top of the head, the native usually standing on one leg meanwhile. The spear is projected with what is called a "woomera," an instrument which is retained in the hand when the spear is thrown. It is usually made about three or four feet long, and is simply a round stick with a barb two or three inches in length at one end. This barb fits into a hole at the end of the spear, which is then easily thrown with great force. The natives can hit an object with tolerable precision at a distance of a hundred yards, so it is a dangerous weapon. Another weapon they use is a great unwieldy sword. Like most of their instruments, this is made of wood, and as it ranges from four to six feet in length, you can form some idea of its weight. This sword is sometimes used with both hands, and is certainly a very ugly weapon, a single blow being sufficient to bring the strongest man to the ground. They make several sorts of shields or "heilamans as they call them, some for spears, and others for "nulla nullas" and swords, and they are exceedingly expert in their use, and so they had need to be, for rows are of frequent occurrence amongst them. After this party had finished tea, the oldest man took a small stick out of the fire, and blowing it very carefully to keep it alight, said good-bye and set off, followed very closely by the rest. This little lighted stick was carried to keep away the "Debble Debble:" no native will travel without it at night, and the knowledge of this fact was a source of comfort to us many times afterwards when we got farther north.

We did not do much shooting at this camp, but still got a splendid pair of Little Green Fruit Pigeons, *Chalcophaps chrysochlora*, and one or two Black-fronted Fly Catchers, *Monarcha trivirgata*. We were also successful in purchasing a sample of weapons from the natives.

On the 28th July we returned to Townsville, meeting our friend Mr. Campbell, and also having another addition to our numbers in the person of Mr. A. A. Gulliver, a botanist connected with the Acacia Vale Nursery, Townsville.

Next day we left by the "S.S. Palmer" for Cardwell, which we reached after a fine run of fifteen hours.

Cardwell really seems to be a town of the past. It is fifty years behind the age at least. How the few inhabitants exist is a mystery to visitors. The buildings seem rapidly falling into decay, in fact, if the government offices, &c., were removed, there would hardly be a respectable looking house left.

If you have an hour's business to do at the store, you must certainly make up your mind to devote the major part of the day to it, and consider yourself fortunate if you get through in that time. There is no church in the place, and services are not read on Sundays as in most other places.

The sleepy appearance of the town did not trouble us much, for after staying long enough to lay in a stock of provisions, we made straight for the bush, and finally camped at Heunga Creek, four miles distant. This is a very pretty place and I am sure the site of our camp would make a fine picture. In front of us ran the creek, its sides fringed to a considerable depth with the tropical scrub, the density of which we had yet to learn by painful experience, but which seen for the first time certainly looked inviting. On our right was a garden, filled with Orange, Lemon, Lime, Guava, and Cocconut-trees, most of them bearing ripe fruit, which stood out in strong relief from the dark green leaves, while behind us ran a long range of rugged-looking mountains, Siever's Range they are called, which seemed to promise us many a weary day's tramp in the future: and the promise was fulfilled.

During this, our first night at Heunga Creek, it came on to rain, in fact, the rain was our greatest drawback, and during the remainder of our stay, we certainly had enough of it. Between the Herbert and Johnson Rivers, the rainfall is greater than in any other part of Queensland, so we could not expect to escape it, but I really think we had more than our share.

Owing to the wet we did not get anything very good during the first week, but still managed to secure a few of the commoner varieties, such as the Black-headed Pardalote, *Pardalotus melanocephalus*, the Bronzed and Unadorned Cuckoos, *Lamprocoryx lucidus* and *Cuculus inornatus*, a Black Duck, *Anas superciliosa*, and sundry others, but as the weather got more settled, we made several good takes. The first was a pair of Blue Shining Fly-catchers, *Piezorhynchus nitidus*, beautiful birds. The female differs greatly from the male, in fact, it may easily be taken for another variety. Instead of the dark blue on the back, it has a light chocolate colour,



which presents a striking contrast. They are rare birds. We only obtained this pair during our stay and they are now in the Melbourne Museum. Other birds we got, such as the Night-jar, *Caprimulgus macrurus*, Macleay's Lorikeet, and one or two Coucals, or Native Pheasants. These Coucals seem to me to be a different variety to those we obtained at Stewart's Creek. All we shot here had black heads, while the others were perfectly brown, not a black feather to be seen.

After working around our camp for a fortnight, we decided to strike out somewhat, so set sail one fine morning for the Hinchinbrook Island, which is about five miles distant from Cardwell, reaching it at 10 a.m. It is a fine island, about thirty miles long, and averaging, perhaps, five in width. Some few years ago, it was a noted stronghold of the natives, but now, although there are still a number of them on the island, they are not so dangerous. The only European settlement there is a saw-mill, where about twenty men are employed, but the place is such a noted fever bed, that no less than two hundred have been engaged during the last six months to keep up their staff of twenty. Some men are only there twenty-four hours when they are stricken down. We considered we were fortunate in escaping the malaria. Birds are not numerous there, but still there are some very good ones to be had. We secured specimens of the Painted Quail, *Hemipodius velox*, Swainson's Fruit Pigeon, *Ptilinopus Swainsonii*, Pied Fly-catcher, Kaup's Fly-catcher, Obscure Honey-eater, *Myzomela obscura*, and others.

We only spent two nights on the Island, but we made the most of our time and altogether did very well.

We spent the remainder of the week around our old camp, and after a lot of scheming shot a pair of Leach's Cockatoos, birds that are very hard to get at, a small Brown Shrike, a Yellow-throated Friar Bird, a Pectoral Rail, and others.

The next week we made a start for the Murray River, which is a distance of twenty miles, and after a tiring walk, which occupied the major part of the day, camped on the selection of Mr. Stuart Workman. It was here we learned the meaning of the word scrub, as it is understood in Queensland.

As you approach the river, you see in front of you a belt of timber, looking cool and refreshing, just the place you think where birds are likely to be found during the heat of the day. When you get within a hundred yards of it, you pass through a thick patch of sword grass which nearly always grows on the outskirts. Passing this you enter the scrub itself, which for the first few yards is tolerably clear. As you get in, it rapidly thickens, and before you know where you are, you are encompassed on all sides. You stoop to escape some overhanging bough, and find your hat neatly lifted off by a lawyer, which is the name given to a cane, which

throws out very long feelers covered thickly with strong thorns or barbs. You attempt to step back to recover it, and find another feeler is holding you firm by the shoulder; you free yourself from it only to find others elsewhere; and so you go on, freeing yourself and being caught, stumbling over roots and creepers, sometimes sinking nearly up to your knees in damp decaying vegetation, your clothes torn, and the perspiration streaming from every pore. You hear plenty of birds, but the undergrowth is so thick that you cannot see them, and of course the noise you make breaking through frightens anything that may be in your immediate vicinity. I am not describing one patch only, it is the same right through. One day we attempted to break through, and it took us two hours to go a single mile, which was the width of the scrub in this spot, and we were working hard all the time. Scrub is by far too mild a term—it is really a dense tropical jungle.

We had a very rough time of it during our stay at this river, it being wet nearly all the time. The birds we got we paid for rather dearly. They consisted principally of Fruit Pigeons, which feed upon the Quandongs and Palm Seeds, that grow in great abundance there, but as the trees grow very high it is difficult to get a shot, owing to the thickness of the undergrowth. The Cassowary, *Casuarus Australis*, is also to be found there, but we were unable to come across one. We secured during the week specimens of the magnificent and Green Fruit Pigeons, *Carpophaga magnifica*, and *Chalcophaps chrysochlora*, King Parrots, *Aprosmictus scapulatus*, Pigmy Geese, *Nettapus pulchellus*, Cat Bird, *Ptilomorphynchus Smithii*, Shining Calornis, and others. This Calornis sometimes called the Shining Starling, *Aplonis metallica*, is a very handsome little bird. They are said to migrate to New Guinea, returning to Queensland each breeding season, but of this I am not certain. I know they are to be found there, and also that they are only seen in the Queensland scrubs during about three months of the year, so that seems to substantiate the theory. They go about in flocks of about a hundred, and select a very high tree in the densest part of the scrub, which they completely cover with nests composed of grass, palm fibre, etc. Here they are to be found in the mornings and evenings, chirping and twittering away to a great extent. During the middle of the day they disperse in twos and threes about the scrub, searching for fruit, which seems to be their only food. We were rather too early to secure their eggs, but even had it been the right time of the year, we would have found it very difficult, as the only tree we saw their nests in was fully two hundred feet high, and without a branch until you get within twenty feet of the top. The male and female of these birds are so much alike, that you can only distinguish them by dissection.

The Pigmy Geese I shot in a lagoon, and had to swim for, running the risk of alligators which are rather plentiful in this district.

Several others were wounded, but as they could dive faster than I could swim they escaped. Those I got were very good specimens, and quite compensated me for the risk of the alligators, or crocodiles as they ought to be called.

The natives are very troublesome in this district, and are shot down without mercy by the selectors. Two were shot down not far from us, their only crime being that of stealing sweet potatoes. There is really some excuse for this sort of thing, for it is not unusual for a selector to leave his log house securely fastened in the morning, and when he returns at night to find everything movable carried off. Even tubs and pack-saddles, things the natives have no earthly use for, are taken with the rest.

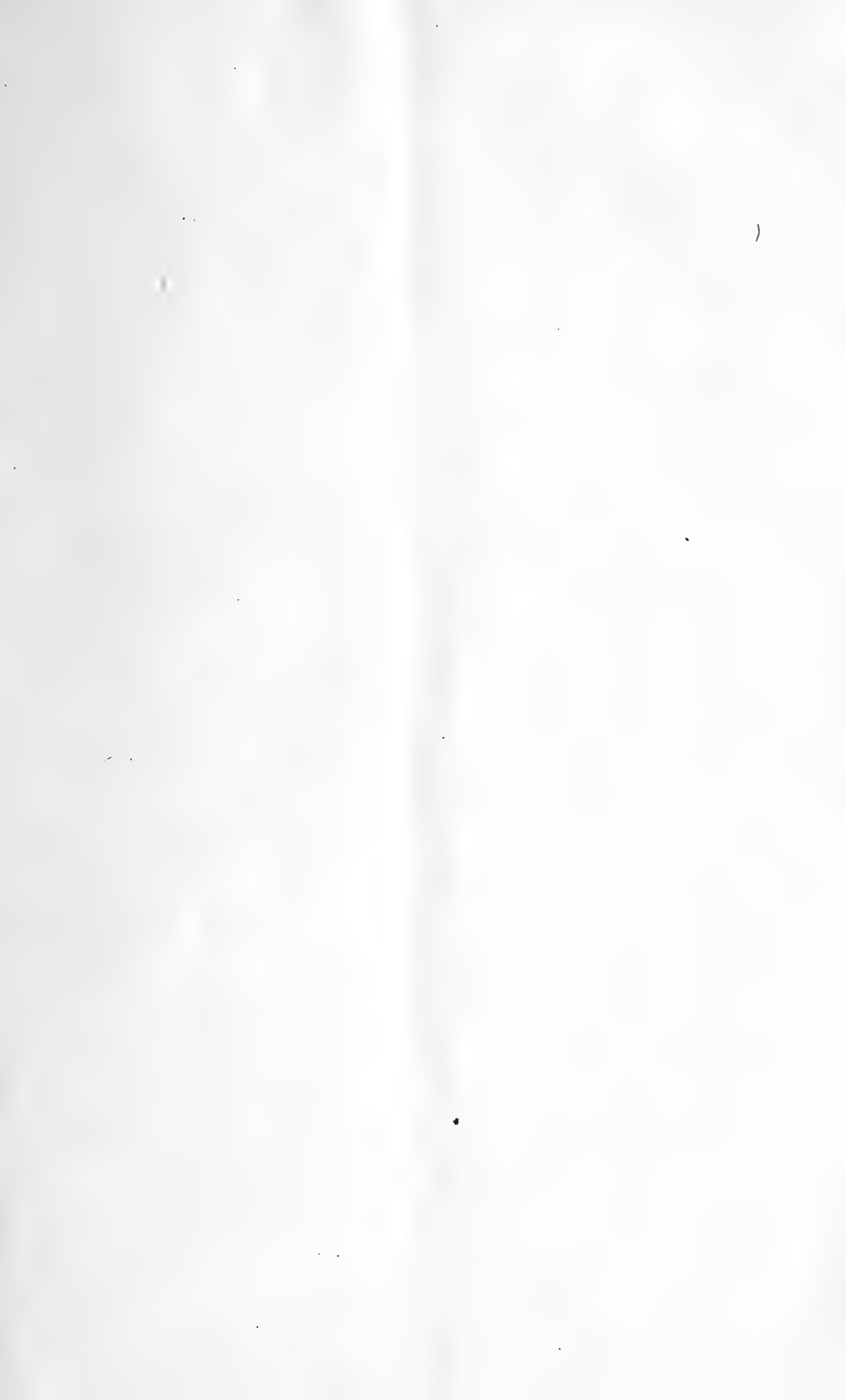
After spending a week in this locality, we made a start back to Heunga Creek, and a terrible trip we had. Owing to the rain that had fallen during the week, and the very low nature of the country, our road was under water nearly all the way, and so soft and boggy, that we were unable to take a horse, so had to make up our things into swags, and carry them ourselves. During the day we waded through no less than seventy-four creeks, waterholes, and bogs.

Amongst other places, we were very anxious to visit the North Barnard Islands, and secure some of the famous Victoria Rifle Birds, (*Ptilotis Victoria*), before finally returning to Melbourne, so having made the acquaintance of Mr. Walsh the Police Magistrate and Harbour Master, who very kindly offered to place the pilot cutter and crew at our disposal for a week, we decided to avail ourselves of the opportunity. On the 1st September, therefore, we boarded the cutter and set sail, reaching the largest island of the North Group at five p.m., where we anchored for the night. We had the misfortune to have very bad weather, and were rocked to and fro in a very lively fashion. Even the sailors admitted they felt queer, and when morning broke, we found it quite impossible to land, owing to the surf. It was very disappointing, but we resolved to make the best of it by running into Hourilyan Harbour, and going over a sugar plantation which was in the vicinity, returning to the Barnards on our way back. We soon made this harbour, the smooth water of which was a great relief to us after the tossing about of the previous twenty-four hours. It is a splendid shelter for shipping, and owing to the great depth of the water, steamers of any size can enter easily. The depth where we anchored was seventy-two feet, so that will give you some idea. After breakfast we went on shore, and were just in time to catch the tram, which runs daily to the Hourilyan Sugar Co.'s plantation, a distance of seven miles, and as we were rather shaky after our voyage, we were glad to avail ourselves of this mode of transit. This tramway was constructed expressly for the use of the Sugar Co., and cost them no less than thirty thousand pounds, a sum that seems almost incredible, but then you must remember it was laid through a dense

scrub, and at a time when fever was so prevalent that white labor had to be given up, and Chinamen employed. The plantation is really a splendid one, vast fields of cane in every direction. They employ a hundred white men and three hundred Kanakas, and their output during crushing, (which occupies six months a year), is twenty tons daily. The Kanakas are very happy and contented, and seem to be in every way much better off than when on their native islands. After dining at the manager's residence, we were shown over the mill, the machinery of which astonished us. It would take an hour to describe it, so I shall let it alone, and merely say that we were more than satisfied with our visit. On returning to the cutter we found the sailors had been busy fishing during our absence, and had caught a splendid lot of Red Bream, fish weighing two or three pounds each, which made a welcome addition to our bill of fare. On the morrow, as it was still too rough to venture outside, we remained at anchor, and spent the day assisting our botanist to collect ferns and orchids, and between us made a very good haul.

During the evening the wind moderated and the sea went down, so at daybreak next morning we made another start for the Barnards, where we landed without difficulty about nine a.m. This island, the largest of the group, is about half a mile across, and is simply a mountain rising out of the sea. The sides in some parts are exceedingly steep, and it is completely covered with scrub, similar to that found on the mainland. As there is no water to be found there, it is uninhabited, so we were not in much danger from the blacks. It turned out to be a very wet day, but still we were not to be deterred by trifles when the cry of the Rifle Bird was ringing in our ears, so we soon made a dive into the scrub. We found the birds very shy and hard to get at, and it was dreary work poking about in the wet scrub, sometimes standing still for half an hour with the rain beating down on you, waiting for a bird you could hear close by to show himself, but we kept at it, and when we returned to the cutter found we had secured seven male and ten female Rifle Birds. They are really beautiful birds, and well worth the trouble we took to get them. They are not plentiful on the Island, so we considered ourselves fortunate in getting so many. As we were anxious to return to Cardwell before Sunday, we weighed anchor at ten p.m., and started on our return journey, but not before promising ourselves another visit if possible. We had a fine run back, and by Saturday night were in our old camp at Heunga Creek. Our time was now almost up, one week more and we would have to turn our backs on Northern Queensland, perhaps for ever. We turned this over in our minds during the following day, as we were resting from our labor, writing letters, and finally resolved at all costs to return to the Barnards and have another day or two amongst the Rifle Birds.

*(To be continued.)*



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The Author of each article is responsible for the facts and opinions he records.

CONTENTS:

|                                                                                              | PAGE  |
|----------------------------------------------------------------------------------------------|-------|
| Proceedings of the Field Naturalists' Club of Victoria ...                                   | (125) |
| Victorian Fungi. By MISS F. M. CAMPBELL. ...                                                 | (127) |
| Collector's Trip to North Queensland. By A. W. COLES ...                                     | (127) |
| Notes on the Habits of Native Birds. By I. BATEY. ...                                        | (128) |
| Orchideæ of Victoria. By C. FRENCH, Part 8. ...                                              | (130) |
| Description of a New Papuan Dilleniaceous Plant. By<br>BARON FERD. VON MUELLER, K.C.M.G. ... | (134) |
| Notices of Books. ...                                                                        | (135) |

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens, with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

Copies of the Annual Report and List of Members for 1884-5, with Rules, etc., can be obtained on application to the Hon. Sec.



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No. 27

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## THE FIELD NATURALISTS' CLUB OF VICTORIA.

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THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 8th February 1886.

The president, the Rev. J. J. Halley, occupied the chair, and about sixty members and visitors were present.

The hon. librarian acknowledged the receipt of the following donations to the Club's library:—"Select Extra-Tropical Plants," (new edition) from Baron F. von Mueller; "Journal of Pharmacy," Vol. I., No. 1., from the Pharmaceutical Society.

The following persons were elected members of the Club:—Mrs. J. F. Roberts, Messrs. E. Hearne, Jno. Hillard, G. A. Keartland, and Master James.

The Annual Conversazione was fixed for Tuesday evening, April 20th next, and members were asked to bear in mind the preparation of exhibits.

Papers read:—1. By Mr. C. A. Topp, M.A., "Further Notes on the Utricularias." This was supplementary to a paper read by him before the Club in July last, and published in the *Victorian Naturalist*, (Vol. I., page 71.) The former paper referred principally to *Utricularia lateriflora*; in this were given the author's observations on *U. dichotoma*, the larger Victorian species of this genus. It was well illustrated by drawings and microscopic slides of the utricles.

2. By Mr. F. Reader, on "The Immigration of Plants." After giving the various ways by which the immigration of plants may be effected, he stated that he had collected at least 300 species of plants around Melbourne, which were aliens, and which he thought should

be mentioned as naturalised plants in a flora of the colony, which statement caused some little discussion.

3. By Mr. H. Watts, "Notes on Hemipterous Insects." These referred principally to the microscopic species of the sub-order *Heteroptera*, the so called "plant bugs." The paper was illustrated by some beautifully prepared slides for the microscope. The writer's statement as to the position of the wings in the *Heteroptera* was questioned by several of the members present.

4. By Mr. C. French, F.L.S., "The Orchids of Victoria," Part IX., describing the following species of the genus *Pterostylis*, viz., *concinna*, *pedunculata*, *nana*, *parviflora*, *barbata*, *mutica*, *rufa*, *longifolia*, and *rittata*. Dried specimens of each plant were exhibited.

5. By Dr. Lucas, "New Fijian Lepidoptera." This being principally a list of the various species, was taken as read.

The following were the principal exhibits:—By Miss F. M. Campbell, a collection of about 350 species of Victorian fungi, dried and mounted, twenty of them being hitherto unrecorded for Victoria; by Mr. G. Coghill, beetles, *Catadroma Lacordairei*, and *Agabus* species; by Mr. A. Coles, fish, Victorian flounder, and red mullet, stuffed by new process, also fine specimen of the European eagle or horned owl, (mounted); by Mr. E. Dombrain, wasp's and hornet's nests from Murray district, and some minute frogs; by Mr. T. A. Forbes-Leith, the little sulphur-crested cockatoo, (*Cacatua sulphurea*), from island of Timor; by Mr. C. French, orchids in illustration of paper, two humming-birds, *Paphiosa Helena*, and *Myrtis faunice*, also flowers of Sturt's Desert Pea, *Clanthus Dampieri*; by Mr. E. H. Hennell, copper ore from South Australia, silver ore from Silverton, also quartz crystals, etc., fossils from Tenby, South Wales, two volumes of a manuscript work on British Lepidoptera with hand-painted illustrations; by Mr. G. R. Hill, small crustacea, "whale food" from Oamaru, New Zealand; by Master G. E. Hill, Victorian and New Zealand coleoptera; by Master H. Hill, Victorian and New Zealand lepidoptera; by Mr. H. Kennon, a live turtle; by Dr. Lucas, twenty-four new species of lepidoptera from Fiji; by Mr. A. H. S. Lucas, Victorian shells, species of *Ialotis* by Mr. J. McKibbin, sixty species of Victorian lepidoptera; by Mr. A. J. North, eggs of rare bird, *Apteryx Australis*, from South Island, New Zealand; by Mr. J. E. Prince, "Moore's Nature-printed British Ferns," two vols.; by Mr. F. Reader, orchids and ferns collected in neighbourhood of Paris by M. Brunetti; by Mr. G. Rose, fossil sharks' teeth from Cheltenham, fossil wood from New South Wales; by Mr. C. A. Topp, plants, etc. of *Utricularia dichotoma*; by Mr. H. Watts,

twenty-two species of Heteropterous insects mounted for the microscope.

After the usual *conversazione* the meeting terminated.

## VICTORIAN FUNGI.

The following species of Victorian fungi hitherto unrecorded, were exhibited by Miss F. M. Campbell, at the February meeting of the Field Naturalists' Club of Victoria.

*Agaricus interceptus*, Berk., Beenak; *A. (Pleurotus) lignatilis*, Fries.; *A. (Flammula) sapineus*, Fries.; *Trogia crispa*, Fries., Beenak; *Panus torulosus*, Fries., Maryborough; *P. incandescens*, Brome; *Polyporus arcularius*; *P. dictyopus*, Mont., Hamilton; *P. (Merisma) acanthoides*, Fries., Beenak; *P. intybaceus*, Fries., Beenak; *P. ovinus*, Fries., Beenak; *P. Boucheanus*, Fries., Beenak; *P. rufescens*, Fries., Thomson River; *P. (Anodermei) plebeius*, Berk.; *Trametes occidentalis*, Fries., Beenak; *Fistulina hepatica*, Fernshaw; *Dædalia unicolor*, Fries., Beenak; *Hydnum membranaceum*, Berk., Beenak; *Clavaria multina*, Berk., Beenak; *Lachnocladium*, Lev. sp.; *Nectria coccinea*; and *Peziza apophysata*, Cooke.

## A COLLECTOR'S TRIP TO NORTH QUEENSLAND.

BY A. W. COLRS.

(Read before the Field Naturalists' Club of Victoria, 11th Nov., 1885)

(Concluded.)

EARLY on Monday morning I went into Cardwell, and made arrangements with the agent of the S.S. *Burdekin*, (a steamer which runs between Townsville and Cairns), to land us on the coral beach we were so anxious to tread once more. The remainder of the day was spent in making preparations, and they had to be more complete than before, as of course, we had no cutter to fall back upon, and had to take tent, water, &c., with us. On Tuesday, September 8th, we went on board the *Burdekin*, and by two p.m. were once more the sole inhabitants of this beautiful isle.

We were again unfortunate as regards weather; it rained at intervals during the whole time we were there. After rigging our tent, we were soon in the scrubs, in spite of weather or anything else, and before night secured one male and two female Rifles. On

darkness coming on, we turned in, but we spent a very bad night. Our bed was composed of coral, mingled with a sort of mould produced by decayed wood, so it was none of the softest, and, of course, the rain had made it exceedingly damp. Then, added to this, the place was infested with large scrub rats, who ran over our faces, ate our birds, and ran away with our condensed milk, tin and all. It was no use trying to drive them away, they were back again the next minute. We had seen some blacks paddling about in their canoes during the day, so had to be on the look-out for them, it was therefore no wonder our sleep was rather broken. The longest night must come to an end, and so it did in this case, and at daybreak we were again in the scrubs. The birds were harder to get than before, and after a hard day's work we could only produce four male Rifles and a Torres Strait Fruit Pigeon. After another miserable night, our last day at the Barnards dawned upon us, and we were still at it; and when the Burdekin came to take us off, had secured two Mound-raising Megapodes.

We had a little difficulty in getting off, owing to the surf, but the sailors understood their work, and we were soon safely on board, bidding adieu for the last time to the scene of our labors.

We had a rough passage back to our old camp, which by this time seemed like home to us, arriving there wet and weary.

We took altogether twenty-four Rifle Birds, the largest number that has ever been taken on these Islands at one time.

The time had now arrived for us to take our departure, which we did with many regrets.

We left Caldwell on the 12th of September, arriving in Melbourne on the 15th, after an absence of four months.

Altogether we secured over a hundred species of birds, and about three hundred and fifty specimens.

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## NOTES ON THE HABITS OF NATIVE BIRDS.

BY I. BATEY, SUNBURY.

*Read before the Field Naturalists' Club of Victoria, 13th Aug., 1885*

### PART I., CROWS.

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*Continued.*

In boyhood's days, whenever we discovered a crow's nest, one of us would tap the trunk of the tree with a stick, causing the bird to hop out on to a branch to ascertain the cause of the disturbance,

where it was easily shot. As we improved in our shooting, we used to send a rifle ball through the centre of the nest, thus doing for bird and eggs at the same time. Then the male bird's prudence broke down, and he invariably lost all forethought, or became totally regardless of the life of his future partner. After the loss of the first one, he would scud about to and fro with great diligence until he secured a new mate. She would take charge of his desolate home, lay her eggs, commence to sit, only to experience the fate of her predecessor. The twice bereaved widower either then lost heart, or the season became too far advanced to negotiate a third matrimonial alliance.

Should you shoot a crow out of a flock, it is a very common occurrence for the survivors to create a discordant fuss over their fallen comrade. It seems to be either surprise or anger that prompts them to do this, as if it were fear they would in all probability take themselves off. Sometimes I have shot half a dozen, one after another, before they would leave the spot, and I have thought that with a breech-loader, when they get into that state, a person could make the gun red-hot with firing at them. Perhaps it was not the firing of the few shots that at last impelled them to fly away, but that your muzzle-loader could not be worked quick enough to occupy their attention with fallen birds. White cockatoos, even when they are disturbed, have the same trick, with this difference, that they have a fair estimate of how far heavy shot travels, or how long it takes to charge the old-fashioned gun.

When I first went down to the Murrumbidgee, a place then noted for old shepherd's ideas, it was said that strychnine was not fatal to crows. The manager of the station used to keep us supplied with that deadly poison, and sometimes I tried experiments with it. My general way of proceeding was to get a sheep, which had been smothered in the mud of the drinking ditch, partially skin the animal, cut the heart and liver into tempting little slices, and touch lightly with the poison. These I scattered about the carcass, also putting some into the sheep in tempting spots. While these preparations were being made, the birds would sit around on dead trees glancing obliquely at me, as if they guessed I was up to something crooked. All being ready I would adjourn to the hut, telling my fellow *employés* to look out for sport. Before I could get my pipe ready for a smoke, down the sable rascals would pour. At first they would advance with great caution, casting suspicious looks around. Perhaps one would march boldly up, look again askance, and retreat with a sudden hop backwards, with a caw to show he was not frightened. Again he would go forward, pause, gather fresh courage, and at last rush valiantly into the jaws of death. This was a signal for the rest to fall to. For the ensuing ten minutes, what feasting and revelry there was, every loose morsel

being carefully gathered up. Before the expiry of the short time I have mentioned, there would be signs of a general break up in the camp. One of the birds, which had got his share of the terrible poison, would essay flight, but before he had sailed many yards would be seized with convulsions. Down he would thud on the ground, every crow would arise with a loud discordant cry, circling over and around, whilst now and then others would drop, or fly reeling away to die. The uproar might last for half an hour, after which the terrible din, which requires to be heard to be realised, would subside. Would any of the surviving birds touch that sheep again? no not one, in a spirit of negative generosity, they relegated it to the ubiquitous Polystominidæ.

## ORCHIDEÆ OF VICTORIA.

By C. French, F.L.S., Department of Government Botanist.

(Part 8.)

(Read before the Field Naturalists' Club of Victoria, June 10th, 1885)

### MICROTIS, (R. Brown.)

DORSAL sepal erect, broad, incurved, concave; lateral sepals as long or shorter, lanceolate or oblong, spreading or recurved, petals usually narrower, incurved or spreading. Labellum sessile, oblong. Column very short, with 2 small wings behind the stigma. Anther erect, 2-celled, pollen masses granular, stigma obtuse, or with a rostrum shorter than the anther. Leaf solitary. Flowers small, green or whitish, usually numerous in a terminal spike.

### MICROTIS PORRIFOLIA. (Sprengel.)

This common and most cosmopolitan species will be known to most collectors by its very strong resemblance in appearance to young onions. It makes its appearance early in spring, and in strong soil sometimes attains a height of 18 or 20 inches. The flowers are of a pale green color, not unlike some of the more slender forms of *Prasophyllum*, but differing from that genus in many respects. It may be looked for in open, grassy country, although it is equally common on heathy flats, &c. This *sp.*, excepting for a botanical collection, is of little value, and although easily cultivated, it dries badly. *M. porrifolia*, is the largest as well as the best marked indigenous *sp.* To grow it, use sandy loam, well pressed down, with plenty of water while in active growth.

This *sp.* should be kept in as open a place as possible, (avoiding the hottest positions), and will often require tying to a stake, as it is apt to become drawn, and topple over. Although so humble in appearance, this orchid has quite an array of synonyms, and *M. Banksii*, *M. unifolia*, *M. rara*, *M. pulchella*, (of Lindley, not of Brown), *M. arenaria* and *M. frutellorum*, are identical with this *sp.* Flowers in the summer. It is also found in New South Wales, Queensland, South Australia, Tasmania, and in New Zealand.

MICROTIS PARVIFLORA, (R. Brown.)

This is said to be a more slender *sp.* than the former, the leaf and especially the sheath much narrower, the flowers smaller, and less crowded in the majority of specimens, and from the above description, abbreviated from the "Flora," it seems to be intermediate between *M. parvifolia* and *M. atrata*. I do not remember to have found this *sp.* myself, although near Frankston and Mt. Martha, I have collected this, or a *sp.* answering very well to its description. It will, however, be of little use as a cultural plant, and if required in the collection, the same treatment as that recommended for the larger *sp.* will suffice. This *sp.* according to Benthams and Mueller, seems to have a very wide range, being found in New South Wales, Queensland, Tasmania, Western Australia, extending also to New Caledonia, the Indian Archipelago, and South China. Baron von Mueller, in his valuable "Census" of Australian plants, has omitted this *sp.*, considering it, I believe, to be a form of *M. parvifolia*, and with his usual accuracy of observation and description, his view is doubtless the correct one.

MICROTIS ATRATA, (Lindley.)

This *sp.* is the smallest of the genus, at any rate, so far as Victoria is concerned. It should be looked for in the most damp places on heathy flats; in fact I have found it in ground with two inches of water on the surface. It may easily be detected by its habit of growing in patches, its yellowish green flowers, being in bare ground very conspicuous. I well remember, when in company with a friend who had then the orchid mania somewhat severely, I first found this little plant in a most prolific paddock at Caulfield, (since improved out of existence), and it was then considered a prize. But then this was more than twenty years since, during which time it has been found in many other parts of the colony; nevertheless, I think my specimens were the first living ones which Baron von Mueller sent to Europe. This *sp.* it will be noticed, has somewhat short leaves, with the spike standing well above them. Benthams remarks as a peculiarity of this *sp.*, that it usually dries black, a remark which will also apply to the three Victorian *sp.*, and possibly to

the others also. This little plant is the best worthy of cultivation of the three *sp.*, because of its compact habit. To grow it well, place say fifty tubers in a shallow pot or pan, filled to within half an inch of the rim with black sand or sandy loam, water plentifully, and keep from the direct rays of the sun. Flowers in December and January. Height from 2 to 4 inches. *M. minutiflora*, is identical with this *sp.* Found also in South and Western Australia.

#### CORYSANTHES. (R. Brown.)

Dorsal sepal erect, very much incurved and concave, hood-shaped or contracted, lateral sepals and petals small, linear, sometimes minute. Labellum erect under the galea, broadly tubular, the margin of the oblique orifice either shortly recurved and denticulated, or produced into a large concave denticulate or fringed lamina closely reflexed. Column short, erect. Anther erect, 2-celled. Pollen masses granular, without any caudicle, dwarf terrestrial herbs, with small, white underground tubers nearly round, and a single ovate-cordate leaf, with a sheathing bract below it. Flowers solitary, sessile within the leaf.

#### CORYSANTHES PRUINOSA. (R. Cunningham.)

This curious little orchid is perhaps as well known as it is common, and as the excellent description from the "Flora," given above, will enable any of you to recognise it at a glance, it will be unnecessary for me to go any further for the purpose of description. To those who wish to find this *sp.*, I may mention that it is to be found in the middle of Spring, growing in great abundance all through the Tea-Tree scrub, *Leptospermum laevigatum*, in the neighbourhood of Brighton, Cheltenham, and in fact, almost anywhere and everywhere, its shining green leaves, and small, brownish purple flower being easily seen peeping from amongst the sand. This plant has for many years been called by orchid collectors *C. fimbriatus*, but it appears that some mistake had been made, which has since been rectified. To grow it well, it should be lifted shortly after flowering, when the tubers should be carefully taken up, placed in sandy soil, if possible, the surface from the Tea-Tree scrub, and grown in a shallow pot or pan with thorough drainage. Water should be sparingly given, until near the time of flowering. As a plant for cultivation, this pretty *sp.* is only valuable as a distinct plant amongst Victorian orchids. It grows to the height of about from 1 to 2 inches, and like many other of the orchideæ, dries black. Found also in New South Wales, South and Western Australia, and in Tasmania. *Corybas pruinosa*, is identical with this *sp.* I may remark that the genus *Corysanthes* is also in New Zealand, and the Indian Archipelago.



## PTEROSTYLIS, (R. Brown.)

Dorsal sepal broad, erect, incurved and very concave; petals lanceolate falcate, contracted at the base and attached to the basal projection of the column, falcate and curved under the dorsal sepal, nearly as long and forming with it an arched or hood-shaped upper lip or galea. Labellum on a short claw at the end of the basal projection of the column, moveable. Column elongated within the galea, and curved with it. Stigma oblong on the face of the column. Anther erect, the cells distinct, 2-valved. Pollen masses granular. Radical leaves somewhat ovate. Flowers usually green, often streaked with red, purple, or brown, large and solitary, or smaller, and several in a raceme on short pedicels. I have adopted the plan of Bentham and Mueller in the "Flora," and have placed them in sections and series for easier comparison, commencing with—

ANTENNÆA, lower lip erect, the lobes or their points embracing the galea.

## SERIES I. GRANDIFLORA.

## PTEROSTYLIS CUCULLATA, (Brown.)

This *sp.* is the largest, and perhaps the finest of the Victorian *sp.*, and may be easily recognised by its large green flowers, striped with an almost transparent white, and for the size of flower its somewhat small leaves are peculiar. In the grasslands of Pakenham, Berwick, Oakleigh, &c., this beautiful *sp.* may be found growing in great abundance, although this dwarf plant will sometimes be found "drawn up" in damp places between Melaleuca scrub, to a height of several feet. To grow it well, it should be potted in strong sandy loam, and kept damp, and as it is easily grown, and dries beautifully, it is well worthy of a foremost place in a collection of Victorian orchideæ. It may be interesting to mention that the type of *P. cucullata*, is much smaller and less robust than the variety mentioned here as *grandiflora*, and the very curious form found by myself in 1866, is certainly a most distinct one. Another slender form was found at Brighton by Mr. Dixon and myself, and this the Baron determined to be the variety of *scabrida*, which is somewhat rare in the heath ground near the coast. Flowers from November to January. Found also in Tasmania and in South Australia. *P. dubia* and *P. scabrida*, are synonymous with this *sp.*

## P. FURCATA, (Lindley.)

This *sp.*, the specimens of which were collected at Bolwana, Bullarook Forest, by my son, is, as you will observe, very much like *P. cucullata*, and indeed Hooker, "Flora Tasmanica," seems to think them identical, the principal difference being, as he points out, in the external structure of the plant, the internal parts being the

same. It seems to me, however, that the whole plant is longer and narrower, and not so transparent as those of *P. cucullata*. However, I am not disposed or qualified to argue with this profound scientist, although the name *furcata* is adopted by the late Mr. Bentham. This *sp.* grows on damp grassland amongst the ranges, and is said to remain in flower for several months, the specimens exhibited being collected I think in January. To grow it well, use loam, and plenty of water. Height from 3 to 8 inches. Found also in Tasmania.

*P. REFLEXA*, (Robt. Brown.)

A very handsome *sp.* growing from 3 to 6 or 8 inches high, with slender stem and narrow leaves, the stem being slightly pubescent. The flower is, (on the specimens which I have seen), solitary, green with white striæ, and nearly transparent, with a very pointed labellum. This *sp.* is variable, and as is often the case with many other *sp.* of this fine genus, is sometimes difficult to determine. It grows erect, without any radical leaves, although it may assume these after flowering, as does *P. aphylla*. I have only found this on very few occasions, although it is well known from many parts of Victoria, and during the last few months near Hawthorn, by Mr. G. Coghill, a member of our Club. For cultivation, it is one of the best of the genus, being easily grown, flowers early, and dries better than many of the other *sp.* To grow it well, use shallow pots or pans, with leaf mould. Flowers in April and May. *P. revoluta*, *P. scabrada*, and *P. pyramidalis*, (of Endlicher) are identical with this *sp.* Found also in New South Wales, South Australia, and in Western Australia.

*To be continued.*

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## DESCRIPTION OF A NEW PAPUAN DILLENACEOUS PLANT

BY BARON VON MUELLER, K.C.M.G., M.D., Ph.D., F.R.S.

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### WORMIA MACDONALDI.

SHRUBBY; leafstalks rather long, glabrous, slender, not dilated by marginal expansions; leaves chartaceous, nearly ovate, rounded at the base, somewhat acute at the summit, slightly repand and only minutely denticulated at the margin, glabrous on both sides; nerves 15 to 22 prominent from each side of the midrib, rather near to

each other; veins almost transverse between the nerves, very subtle or almost obliterated; peduncles not much longer than the petioles, bearing only 2 or 3 flowers, as well as the pedicels and calyces nearly glabrous; sepals about half as long as the petals, orbicular-ovate, slightly ciliated, otherwise glabrous; petals not very large, obovate-cuneate, gradually much narrowed towards the base; stamens on one side of the flower much less numerous than on the other, those of the inner row considerably longer; pistils generally seven; ovaries glabrous.

On the Strickland-River; W. Baeuerlen.

Height according to collector's note about 12 feet. Leaves on the only specimen obtained to  $6\frac{1}{2}$  inches long and to 3 inches broad, not much paler on the lower side; leafstalks to two inches long; wingless at least in age. Stalklets during anthesis about as long as the calyx. Sepals of firm consistence,  $\frac{1}{2}$  -  $\frac{2}{3}$  inch long. Petals measuring about an inch in length, but even towards the summit, hardly half an inch in breadth; color not recognizable, probably yellow. Inner stamens considerably shorter than the calyx; outer about  $\frac{1}{6}$  inch long; anthers all exceedingly narrow, opening by minute terminal pores. Styles linear-subulate, recurved. Fruit not obtained.

This species is nearest related to *W. oblonga*, from which however it is distinguished already by its flowers being glabrous and only half the size, and by the lesser number of ovaries. From *W. ochreatea* it is distinctly separated by its leaves not being conspicuously serrated and by showing a closer nervature, further by narrower petals and probably also by its fruit.

This highly ornamental plant bears now the name of A. C. Macdonald, Esq., F.R.G.S., as a slight token of scientific appreciation of his strenuous exertions as hon. Treasurer and Secretary of the Victorian branch of the Australian geographic Society, for the furtherance of Capt. Everill's Expedition.

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## NOTICES OF BOOKS.

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WE are glad to notice that Baron von Mueller is issuing a new edition of his *Select Extra-Tropical Plants*. This new Victorian edition is enlarged as well as revised by the author. The object of this work is "to bring together some condensed data in popular language on all the principal utilitarian plants hitherto known to flourish in extra-tropical zones." First, then, over 2200 useful species are described as above, while over 1300 others are alluded to.

As an example of the notes, of their compactness and practical nature, we take at hazard the following: "*Lycium Africum*, Linnè. Africa and South-Western Asia. The 'Caffir-Thorn.' Can with many other species be utilized as a hedge-bush. It is evergreen, fiercely spiny, easily raised from seeds, readily transplanted, quick in growth, stands clipping well, seeds freely, is strong enough to resist cattle, and close enough to keep off fowls. 1½lbs of seeds at a cost of 30s. suffice for a mile of hedging, (Th. Lang.)" After tables of temperature and of rainfall for the colony follow several useful Indices. The first groups the genera according to their uses as Alimentary Plants, Avenue-Plants, Dye-Plants, Fodder, Hedge, Medicinal, Sand-coast, Timber-Plants, &c. The second Index arranges the genera according to their Natural Orders. A geographic Index classifies the plants according to their original habitats. These are interesting as showing at a glance the Orders and the Regions which are most prolific in forms at present used by man. The last Index gives the vernacular names alphabetically arranged. We are unable to do more than to thus indicate the general character and scope of this most practical work, which will be invaluable to agriculturists throughout the colony.

We should wish, though late in doing so, to call the attention of naturalists interested in our marine Zoology to the second volume issued by the Trustees of the Australian Museum, Sydney. The first was a *Catalogue of Australian Crustacea*, by Mr. Haswell, of Sydney. The second is a *Catalogue of the Australian Hydroid Zoophytes* by Mr. W. M. Bale, of Melbourne. In a concise introduction Mr. Bale first describes the Hydra and Hydroid community, with an explanation of the technical terms made use of in the description of the group, and also briefly the remarkable phenomena of reproduction of the Hydroids. Then follows an account of the geographical distribution of the forms found on the Australian coasts. The species of the eastern part of the continent only have been seriously studied, but of these the northern and the southern forms constitute two Faunas so totally distinct that Mr. Bale states that he only knows of two species common to the extreme areas. A very complete Bibliography of the group is given. The systematic portion of the work includes careful diagnoses of the families and genera as well as of the species, so that the study of the group is opened up to all. The description and figures of the species, very many of them described by Mr. Bale for the first time, are so good that identification is rendered easy. The work is thorough from beginning to end. The only complaint we have to make against the Trustees of the Museum is, that by a too profuse and indiscriminate distribution of their publications at first, Australian students are unable to obtain copies to aid or direct them in their work.



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THE

# Victorian Naturalist:

THE JOURNAL AND MAGAZINE

OF THE

**Field Naturalists' Club of Victoria.**

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The Author of each article is responsible for the facts and opinions he records.

## CONTENTS:

|                                                                                              | PAGE |
|----------------------------------------------------------------------------------------------|------|
| Proceedings of the Field Naturalists' Club of Victoria ...                                   | 149  |
| To Wilson's Promontory Overland. By J. B. GREGORY, LL.M.,<br>AND A. H. S. LUCAS, M.A. ... .. | 150  |
| Notes on the Habits of Native Birds. By I. BATEY. ...                                        | 154  |

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THIS CLUB was founded in 1880 for the purpose of affording observers and lovers of Natural History regular and frequent opportunities for discussing those special subjects in which they are mutually interested; for the Exhibition of Specimens; and for promoting Observations in the Field by means of Excursions to various collecting grounds around the Metropolis.

No Entrance Fee. Annual Subscription, including copy of proceedings, 15s., dating from May 1st.

The Ordinary Meetings for the reading of papers, and exhibition of specimens with a short conversazione, are held on the second Monday in each month at the Royal Society's Hall, Victoria Street, Melbourne, at 8 p.m.

The proceedings of the Club are recorded in its journal—the “Victorian Naturalist.” Annual Subscription, 6s. 6d., post free (to members free). The first Volume, comprising sixteen numbers, with title page and index, just completed. Price—Seven Shillings and Sixpence (post free).

Copies of the Annual Report and List of Members for 1884-5, with Rules, etc., can be obtained on application to the Hon. Sec.



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THE FIELD NATURALISTS' CLUB OF VICTORIA.

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THE monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 8th March, 1886.

The president, the Rev. J. J. Halley, occupied the chair, and about fifty members and visitors were present.

A letter was read from the Hon. Dr. Dobson, apologising for absence, and desiring his paper to be postponed.

The hon. librarian acknowledged the receipt of the following donations to the Club's library:—

"Proceedings of the Royal Society of Tasmania," for 1885, from the Society; "Journal of Pharmacy," Vol. 1., No. 2, from the Pharmaceutical Society.

The following persons were elected members of the Club:—Mr. L. N. Shepherd, and Dr. Springthorpe.

Papers read:—1. By Mr. T. A. Forbes-Leith, "Notes on the Aquilinæ or Eagle family." The author briefly described some of the principal species of this family of birds, giving their several habitats. He also related striking instances of their great size, longevity, powers of sight, etc.

2. The hon. sec. read a paper by Miss F. M. Campbell, entitled "Notes on Edible Fungi." The authoress having first given a general outline of her studies respecting fungi, described in a popular manner about ten species which are common in Victoria, and are usually regarded as poisonous, but which, she stated, if eaten when young and fresh, are harmless. Dried specimens of

each kind were exhibited. The paper was very interesting, and created some little discussion.

Mr. C. French, F.L.S., remarked in connection with the difficulty mentioned of naming specimens, that the whole of the fungi of Australia, (except the "micro" section) described up to date, would be enumerated in Vol. XII. of the *Fragmenta* shortly to be published by Baron von Mueller.

The following were the principal exhibits:—By Miss F. M. Campbell, Victorian fungi in illustration of her paper; by Mr. J. P. Chirnside, gum with insects imbedded from Central Africa; by Mr. G. Coghill, orchid, *Prasophyllum intricatum*, in bloom; by Mr. T. A. Forbes-Leith, a pair of Indian parrakeets, *Palæornis cyanocephalus*; by Mr. C. French, four specimens of birds of paradise, *Paradisea raggiana*; by Mr. R. Hall, a collection of aquatic insects; by Master G. E. Hill, coleoptera; by Master H. Hill, lepidoptera; by Mr. H. Kennon, large mussel shells from Fiji; by Mr. D. McAlpine, some interesting anatomical specimens, comprising preparations of the frog, portions of skeletons of the pigeon and the rabbit, with lithographed plates of same, also a young skate with yelk-bag attached, as found in its egg-case, commonly known as a mermaid's purse; by Mr. J. N. McKibbin, 170 species of coleoptera; by Mr. A. J. North, letter-winged kite, *Elanus scriptus*, with egg; by Mr. F. Reader, plants collected around Warragul; and by Mr. S. H. Wintle, F.L.S., a large topaz, said to be the largest in the world, displaying the true crystalline structure of the topaz, found in a tin mine in Tasmania, three feet below the surface.

After the usual *conversazione* the meeting terminated.

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## TO WILSON'S PROMONTORY OVERLAND.

BY J. B. GREGORY, LL.M., AND A. H. S. LUCAS, M.A.

### Part 4.

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THE silted and sanded up embouchures of the Derby and Tidal Rivers afforded a home for colonies of plants which we did not see elsewhere. We had first at the entrance of the Derby to fight our way through a tangle of tall and thickset bushes of *Styphelia Richei*, and *Exocarpus cupressiformis*, which were in berry, and furnished the only edible fruits which Nature provided for us in our journey. The Victorian Bush is as inhospitable as its settlers of all classes are hospitable. Stout bushes of *Aster glutescens*, *Cryptandra Hookeri*,

and *Allyxia buxifolia* also barred the way, and where the bushes were less dense, the deep, fine, loose sand made progress in a hot sun difficult. Once through the shore-belt and sand-hummocks however we came out on an open flat, which, extending on one side to the river, afforded a good camping ground.

Here we were charmed by the brilliant racemes of *Swainsonia lessertifolia*, of deep blue-purple. A humbler congener, *Lotus australis*, was in full flower. If we are to accept recent views of the development of color in plants, we should expect to find the mauve flowers of the Australian *Lotus* more dependant upon insect agency than the yellow flowers of *L. corniculatus*, so abundant in English meadows. And the *Swainsonias* yet more entomophilous. But we had to hurry on, and could obtain no satisfactory evidence during our midday halt. The ground was in places carpeted with a little Goodeniaceous plant, *Scævola pallida*, of a very social habit, and bearing delicate pale lilac flowers.

A granite spur from the main mass of the Promontory projects northward, and parts the sea from the low marsh and pasture lands of the winding Derby River. We wound our way along the inland flanks of this spur, and commanded thence an excellent view of the river flats. Here we disturbed some King Parrots, and listened to the marsh birds, thinking of old times in the English Fens, as "bittern boomed and coot clanked."

Further on we reached the main mass of granite, and by a pass over Mount Bishop, again made the sea-shore in one of the Western Bays. On our way we gathered late blooms of *Correa speciosa*, of the handsome variety in which the tube of the corolla has acquired a red coloration, the limb remaining green. Bushes of *Calycothrix tetragona*, covered some with white, others with pink blooms, made the slopes gay between the gigantic bosses.

Mr. Gregory has mentioned our climb of Mt. Oberon. Black stumps of *Xanthorrhoea major*, were prominent objects and obstacles to fully 1500 feet above the sea. There was, however, no serious difficulty in the ascent. We had to skirt the projecting smooth masses of granite, which shouldered us off, and managed to pull ourselves up in a nearly vertical crack in the face of the most awkward. The highest point had to be stormed through a brake of tall, closely set saplings, in which I found a nest with young birds, and then a climb up bare rocks set us on the summit. The heat of the fiercely shining sun was our most serious hindrance in the struggle up. At the very top grew freely two interesting Myrtaceous plants, *Kunzea corifolia*, and *Callistemon salignus*, which also occurred at the very tip of the light-house spur. The white Irid, *Diplarrhena Moraea*, appeared generally distributed over the mountain,

and *Aster stellulatus* showed its variability of form, appearing on the heights and at the sea-shore. After taking in full draughts of the fresh, cold air, and as much of high sentiment as the situation supplied, we turned to the descent. We found water in a huge, natural, granite basin, but this, though clear, was brackish through excess of evaporation. It was interesting as furnishing a station suitable for a green Alga, (*Prasiola* or *Enteromorpha*), which had somehow managed to find it out and reach it even at this height. We presently obtained drinkable water oozing out in a spring. This from its first appearance we traced, as a simple rill, then down an alarming succession of waterfalls, until it opened out in a gully and at last entered the sea. As the fall was some 1800 feet, and the distance from the sea not much more than a mile, our little stream led us a considerable chase. In some places indeed, it seemed to lead where man might not follow. Though water finds, no doubt, the shortest course down a mountain side, it is generally the shortest in point of time for water, but not for man. In fact, we should have got down more quickly had we returned by the way we took in the ascent.

Mount Wilson and Mount Latrobe are heavily timbered, and though somewhat higher than Mount Oberon, would hardly repay the much greater toil of their ascent, for there can be no such look-out from the summit of either as we obtained from that of Oberon. The panorama of land and water, island cape and bay, forest-clad hill and river flat, all viewed from such a high point of vantage: this can perhaps only be surpassed in these regions by the view from Mount Wellington, in Tasmania, of the Derwent Estuary, the Western Mountains, and the long Peninsulas of the South East, with the town of Hobart in contrast to the wildness of all surrounding Nature.

I shall not easily forget the weird quiet of our night encampments on the Tidal River, and at the foot of Martin's Hill. As we walked up the left bank of the former stream in search of a camping ground which would satisfy all requisites, we found abundance of water-fowl, swan and duck, on one of the expansions of the river. We had now moonlight nights, and the outlook was sublime. We were in a small plain, shut in landwards by a hard granite semi-circle, with the higher peaks in the back-ground, and with the beating of the surf and roar of the breakers a quarter of a mile on the other side. Yet, sheltered by a line of sand-hummocks and a growth of young Eucalypts, we were comfortable enough in our tent, and far from human aid or interference passed a peaceful New Year's Eve. At the foot of Martin's Hill, a huge owl came and perched on the telegraph pole adjoining our camp. I think it must have been a specimen of the Powerful Owl.

Martin's Hill is the north ascent of a granite plateau, which, with the exception of the narrow and lower spur which forms the lighthouse foreland, constitutes the southern extremity of the Promontory. The climb was a steep one and one could not but marvel at the sagacity and dexterity of our pack-horse. He performed many gymnastic feats during our tramp, but I think his ascent of that harsh, and steep, and insecure hill-front beat all the rest. Once up, however, and the rest of the eight miles to the light-house was easy work. On the brow of the hill, *Gompholobium Huegelii*, and *G. minus* grew together in abundance. We came across three specimens of the blue-tongued lizard, *Cyclodus gigas*, two on this part of our journey. One was feeding on a fungus, the other apparently on a dead bird. They are easy enough to catch, of course, but we carried no means of preserving them. So with the *Echidna*; we disturbed three of these ant-eaters and made them burrow to amuse us, but did not bring away more than a few spines as trophies. Amongst birds we noted the Blue Mountain Parrot, the Cockatoo Parrot, flocks of the little Love Birds, and a number of Parrakeets, which I am quite unable to name. At the mouth of one of the creeks we found fresh emu tracks on our return. While collecting shells on some rocks which ran out into the sea on the seven mile stretch of sand, I noticed a small heron standing near me, and ever and again darting on some victim. I had not before made the acquaintance of a sea-heron, and watched him for some time. Wallabies occasionally bounded away from us, startled at our approach. The sportsman has not yet made the Promontory desolate, and the native inhabitants can still be observed, undisturbed in their proper haunts.

Near the lighthouse I found several everlasting. *Helichrysum lucidum* grew magnificently. *H. obtusifolium* occurs here, but does not reach Tasmania. *H. dealbatum*, however, is found across the Straits. I have already mentioned *H. Baxteri* as extending only to the neck of the Promontory, and I am informed by Baron von Mueller that it had not been observed so far south before. The flora of the Promontory is especially interesting in its relation to the distribution of plants. for here we have the land of the continent which most nearly approaches Tasmania. I must here record my obligations and thanks to Baron von Mueller, to whom I submitted many of my specimens, and whose determinations of difficult species, render this paper trustworthy in its record of plants.

Among the huge granite boulders of this iron coast, and in crevices and caves of the rocky cliffs, grow numbers of specimens of *Asplenium marinum*, which we had gathered in similar situations in Guernsey and Cornwall. It was indeed astonishing to find this plant world-wide in its distribution, and to reflect that it has its habitat, as it were, scarcely on land and scarcely in sea, occupying

as it does, but a narrow slip of vertical or overhanging cliff, and watered by the spray of the tumultuous waves. Surely here is one of the most remarkable of the phenomena of distribution, the conditions of life so restricting, yet the plant so widely spread.

We collected vigorously during our scanty time on the shore of the lighthouse peninsula, and also whenever opportunity presented elsewhere during our expedition. The most interesting among the Mollusca was *Natica Incei*, which has not been found on the Victorian coast before, though recorded from New South Wales. *Triton cutaceus*, (if we may trust Mr. Tenison-Wood's identification of the European species with our own), *Donax deltoidalis*, *Cassidaria undulata*, and the more common open sea forms were collected. The *Donax* was persecuted alike by the *Naticas* and by a multitude of sea-birds, the number of shells bored or broken across being extraordinary. At the crossing of Screw Creek, *Ophiocardelus corneus*, and *Ampulinarina fragilis*, (probably a less robust estuarine form of *A. Quoyi*), were seen in great numbers. Several star-fish were obtained, some not yet described, one of which Prof. McCoy informs me is in the hands of Prof. Agassiz.

In conclusion, we may safely commend the Promontory as full of interest to naturalists of all persuasions. Practically inaccessible as it is at present, we believe that a future yet awaits it as a summer haunt of lovers of nature, lovers of scenery. In many respects alike, we prophecy that as the Cornish Peninsula was late to be discovered by tourists, not many generations will pass before means of communication will enable Victorians to find out and do justice to this noble granite Promontory, the Cornwall of Victoria.

## NOTES ON THE HABITS OF NATIVE BIRDS.

By I. BATEY, SUNBURY.

(Read before the Field Naturalists' Club of Victoria, Jan. 18th, 1886)

### Part 2. COCKATOOS AND MAGPIES.

COCKATOOS having once learned what a gun can do, show talent of a high order when ravaging a newly sown grain paddock. From their mode of conducting operations, they seem to possess a reasoning faculty rather than common instinct. When feeding, several sentries are posted so advantageously, that it is almost an impossibility for the cleverest sneaker to get within shot of the flock. The vigilance of the sentries is truly surprising, for if

danger is lurking about, on the slightest intimation of it, the watchers give the alarm cry, which is at once responded to by the whole flock taking flight. Another curious fact in connection with the sentries, is, that they are relieved at intervals by fresh birds from the main body, who take up the watch, while the others go to feed.

On a certain occasion, I satisfied myself that if these birds settle down with danger in their midst, unknown to them, they do not seek for it there. This day I was lying in wait under a thick bush, within shot of a tall gum-tree, that they used to perch upon before visiting an adjacent oat paddock. Having waited a little time, they came soaring up the creek, near enough for me to secure one with each barrel, but I wanted more than that. They pitched in the paddock, about 160 yards away in a straight line from where I was concealed. Sentries were set as usual, on trees near enough to be reached with a wire cartridge. Having reflected a while, I resolved to effect a sneak upon the main body. From the nature of the ground, I was compelled to adopt a devious course to reach my quarry. To commence, I had to go down a grassy bank for about thirty yards. The herbage, though fairly long, was not sufficiently high to screen me from the sentinels, and if I slid down on my back as I proposed, I should be in full view of those feeding. However, I had little fear, as I knew they were too busy to notice me. Holding the gun close to my body, and lying on my back, I "snaked" myself feet foremost down to the creek, where there was a capital fringe of bushes, and shallow water for wading. Here I was out of view of all parties, so, removing my boots and socks, I travelled noiselessly up stream. Presently the cover began to get thinner, as I caught occasional glimpses of the watchers, and at last ceased altogether. Having accurately marked the place where the birds were feeding, I knew I had some distance yet to go, even to get a long shot. In front of me was a nearly perpendicular bank just about breast high, cut away by the floods, and in full view of the sentries in the backwoods above. There was only one way of getting over the intervening twenty or thirty yards, and that was to "flatten" myself along the bank in sight of the watchers, this I managed successfully, and getting a good shot, secured six birds. From the foregoing, I think it is clear that the sentries direct their vision to the outer part of the circle they are set to watch over, otherwise it would have been an utter impossibility for me to have circumvented them.

Another very striking action on the part of the white cockatoo, is the sending out of scouts for the purpose of investigating the food supply of a district. Persons like myself, who have spent the whole of their days in the bush, and possess some powers of

observation, have unlimited opportunities for noting the peculiarities of birds. Thus, when I see half a dozen cockatoos, or more often a single one, pattering to and fro, as if on a general ramble, I can safely predict, that, provided the spies report favorably, before a week expires the grand horde will appear. It seems perfectly plain to me, and those who are versed in bird lore will doubtless agree, that those birds are sent for the benefit of the general common weal. If they went voluntarily, selfishness would prompt them to settle down for the purpose of enjoying the first fruits of their discovery. This of itself is wonderful, but the most mysterious part of the proceeding to the tyro, is, how the messengers are able to deliver a correct statement of the food supply of the district they have visited.

As I before stated, the vocabulary of the crow consists of the word "caw" with its various modulations, which convey an infinite number of meanings. The language of the cockatoo is more copious, embracing, to my mind, fully six words, if not more. This, taken with the fact that the cockatoo is naturally a more intelligent bird than the crow, seems to show that their acts are regulated more by pure reason than by instinct. It appears clear to me that the spies are sent out for a specific purpose by their comrades, and that they clearly understand the instructions they receive, and these they seem to carry out honestly, and furnish correct accounts of what has come under their ken.

Furthermore, the intelligence of the cockatoo is progressive. In this old settled district they are the hardest birds I know of to work round on, from their habit of placing sentries. Years ago when I resided upon the Lower Murrumbidgee, they never had watchers stationed on trees. The reason this precaution was not taken there, was because no person thought it worth while to waste powder and shot upon them. The best way to get at cockatoos, is to mark the tree in which they roost, and then, provided you do not go to it in the early part of the night, you can get a slaughtering shot at them. A sense of danger keeps them awake for hours, and the crackling of a dry stick instantly puts them to flight. The very best time to get a shot at them, is just before the first streak of dawn appears, then they are very fast asleep, and mutter softly in their dreams.

About a dozen years since, bent on a rabbit shooting excursion, I started off for the Deep Creek an hour or two before daylight. I entered Brodie's Forest just as the first blush of early morn was tinging the eastern sky. Suddenly I heard the low voices of birds in a wide spreading box-tree, under which I was briskly walking. Though familiar with nearly all the bird sounds hereabouts, I failed to detect what sort of birds they proceeded from. It was a low muttering, just as if they were talking in their sleep. Their



somnolent condition was proved by the fact that my resounding footsteps failed to disturb them. There was a fair amount of moonlight, though a little cloudy; all the better for them to see me if they had had their eyes open. Glancing upwards, I saw what they were, and silently retreated a few yards in order to get an effective rake through the tree. Discharging both barrels in rapid succession, I brought down several. What a commotion was raised when I fired, such fluttering, and screeching, one would have thought half the flock had been killed or wounded. Calculating that the escapes might possibly alight again, I waited patiently. After a few gyrations, they took a tall tree on a rise some 300 paces distant. Their cries guided me to the rendezvous, but they were too much on the alert to enable me to get a good shot.

About three years ago when living at Mt. William, near Lancefield, I noticed a flock of cockatoos going to roost one evening, and took bearings so as to get at them when the right time came. When I sallied forth, the night was very dark, with a drizzling rain, and I found it a very hard task to find their whereabouts, but, with the exercise of some perseverance, I eventually succeeded. The light was so bad that I could not distinguish whether they were birds or opossums. Consequently, I shot at random, with the result that when the birds flew out, I heard one fluttering in the branches. Next morning I visited the tree, when I was surprised to find two birds sitting in it. These before I got within range endeavoured to fly, coming to the ground at an angle of 25 degrees. On effecting their capture, I found both hurt about the shoulder joints sufficiently to prevent aerial locomotion. Without doubt, those two birds knew full well the moment they were struck with the shot that they had no chance of escape by flying.

Many other birds display wonderful acuteness in trying to preserve their lives, when they feel the cruel blow of the shot, more especially the aquatic section. I remember shooting at a fine black duck, as he was swimming with some others on a large pool. Simultaneously with the "strike" of the shot he dived. He sought refuge in some reeds, and when I drove him out, I saw that I had broken the pinion of one wing. This bird seemed to know intuitively that future clipping the air with whirring wings was not for him, or else he would have made the attempt when fired upon.

I have casually mentioned Mount William. This range is the home of the "Golboranarook," the stone tomahawk of the aborigines, and if anyone desirous of information visits the part about "the pinnacle," he will find evidence of thousands of stone hatchets having been turned out in the rough. On one sharp ridge I found quite a heap of small splinters, which had been split off in giving the implements their first rude shape. On the Old Man Plain in 1862, I

met a blackfellow of the Waradgery tribe, a most intelligent man about twenty years of age. He informed me, that prior to the coming of the white men, blackfellows from Victoria used to penetrate Riverina on trading excursions. Among the articles of barter they brought, he specially alluded to stone axes which he said were obtained from some hill in Victoria. He produced a fragment of a broken stone hatchet, and said that on his return to the tribe, he would show it to the old men and say he had found one of their chisels.

\* \* \* \* \*

I must now direct my attention to a bird which, both in the wild and tame states, has afforded me a fund of amusement, combined with instruction. I allude to the singing MAGPIE. What lover of sweet sounds does not admire his charming flute-like note. What educated ear for music does not appreciate the splendid tune a party of those melodists keep in chorussing the strain taken up by the leading bird.

Of all our birds I regard him as the most valiant. At breeding time he attacks everything that wears feathers. Savage old cock birds will pluckily go for a man, and oftentimes send his felt hat flying away. When a small boy, I tried to rob the nest of a sturdy veteran, we used to call "savage." His lordship, whether designedly or otherwise, allowed me to climb up to the nest, then he came to the attack, and to a lover of sport it must have been a grand sight to witness how he chased the small boy out of his dominions.

With reference to their private virtues, magpies are truly sociable in their dispositions, they appear to entertain affection for their mates, comport themselves with the dignity of gentlemen, and if occasion demands that they should indulge in a frolic, go into it with spirit. On the other hand they are very intolerant, being the sworn foes of all other birds which consume similar food to their own. Many years since the large brown shrikes resorted to this district (Sunbury) every winter in considerable numbers. The magpies took a particular aversion to them, and being poor inoffensive creatures without any pugnacity, they were greatly tormented. How the yellow-eyed innocent would shriek, when half-a-dozen of its persecutors were pecking away at it, on the ground without mercy. Breaking loose it would try to reach a tree, but only to be tumbled over again. Eventually it would escape, gain a friendly branch, cogitate awhile, hunt for insects under the bark, and then fly down again to resume its occupation of turning over stones or rubbish.

If the singing magpie is unmolested, it courts the society of man; many other birds will do the same, and frequently a staid respectable old couple, looking as if they had spent many happy years together, will march close up to your doorway in search of crumbs. They

have a great liking for unrendered fat, and I have known them to mount a meatsafe, which stood on a back verandah in order to regale themselves on suet.

I have mentioned their love of fun, *i.e.*, in the wild estate, which shows itself in sundry gambols, and mirthful frolics, such as running round trees or stumps as if playing at hide and seek; darting at each other as if pretending to want to fight; or trying to catch another by the tail when on the wing.

On our property we have a very nice clump of box-trees, situated in a sheltered valley close to the homestead. For many years we have used our best endeavours to protect the magpies, the effect of this was, that at a rough guess about two thousand of these birds resorted to this clump at roosting time. Some of them would arrive early, the last appearing about dusk. We took great pride in this splendid show of birds, not to mention the treat it was to go among them, and hear their singing, or watch their funny antics. They were very tame, and would peer down at us inquisitively from the trees. An evil hour at last came for our amusing friends, the establishment of the Sunbury Industrial Schools, the boys of which initiated a system of string snaring that proved most fatal to poor "mag." The number of birds diminished with fearful rapidity; and I do not hesitate to affirm that were the schools still in existence, not a hundred birds would roost where a thousand perched of yore, but now the birds are beginning to make headway again.

The magpie is accused by some persons of carrying off newly hatched chickens, a charge, I think, wholly without foundation, for if it was properly sifted out, a marauding crow would be found to be the culprit, as I never obtained any direct proof that the magpie is guilty of the mischief. In some isolated cases they certainly do pull up the young plants of a grain crop, but if these fields were critically examined, I think the true reason for the mischief would be found to be the superabundance of insect life.

There is another fact about the magpie in its wild state worthy of note. I refer to their low marriage rate. About here, taking into consideration the number of the birds, and the exceedingly small number of nests one finds, I have estimated that pairing is only at the rate of ten per cent. It appears clear to me, that when magpies have increased until they are on an even balance with the food supply of the district they inhabit, the process of reproduction, is, by a wise provision of Nature, reduced to prevent overbalancing. The magpie is decidedly a home-bird, and sticks to established beats. I have met with them in all parts, in some places, of course, more numerous than others. On the station where I lived on the Lower Murrumbidgee, a tract of about 240 square miles of country, not more than a score were to be met with.

We can learn much from them when kept as pets. Off and on, we have had several of them, and when allowed to run about the house, they are very amusing. One bad fault they have, is their love of all kinds of mischief, which displays itself in many ways, pulling up newly transplanted cabbages, snipping the buds off your choicest flowers, or hiding small articles of household economy. Passing over these little failings, they are truly affectionate creatures, and compel you to love them in a thousand endearing little ways. The only person about the place they have an aversion to is the "small boy."

Dry balls consisting of the remains of grasshoppers, beetles, etc., may often be noticed on posts or stumps. Most people would suppose that these had been passed by the birds in the natural way. From observing one of my pet magpies, I found such a supposition quite erroneous. Grain consuming birds are provided with a capacious crop, wherein their food undergoes partial fermentation before entering the gizzard. Insectivorous birds when they overfeed themselves, pack away the superfluous food in the esophagus, just above the breast-bone. This part of the bird seems to be able to perform the part of a stomach, by extracting the nutritious portions of its contents, when this has been accomplished, the bird ejects the worthless remains by vomitory action. One day, noticing something peculiar about my magpie, I watched her. She began yawning, working her head and neck up and down much after the fashion of a pump handle, and presently delivered the ball from her mouth.

Persons who incautiously handle callow nestlings, invariably get their hands defiled for their pains. This was long a mystery to me, as I could not ascribe it to fear, because the youngsters did not exhibit any defined traces of that emotion. Our magpie had an inconceivable horror of dead hares and rabbits, or their skins, and knowing this, I commenced throwing the pelt of one of those animals at her. The first throw produced violent screams, whilst the second and third caused excessive defecation. Here was a solution of the problem why the young birds when handled act in a similar manner. Fear, then, is the true cause, and I think acts by producing sudden muscular contraction. Years before, I had witnessed such muscular contraction, if I may so term it, in birds, more especially in the very small ones. I will suppose that in your rambles you enter a patch of timber where bird life of all kinds is abundant, your eyes are attracted by a pretty little pardalote, hopping merrily about, crackling its stout little bill. Perhaps at the moment it changes its position to a dry twig, the cry of "ware hawk" is raised, a signal instantly understood by all the birds, your pardalote sits perfectly motionless, and actually seems to shrink out of your sight.

*(To be continued.)*



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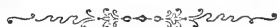
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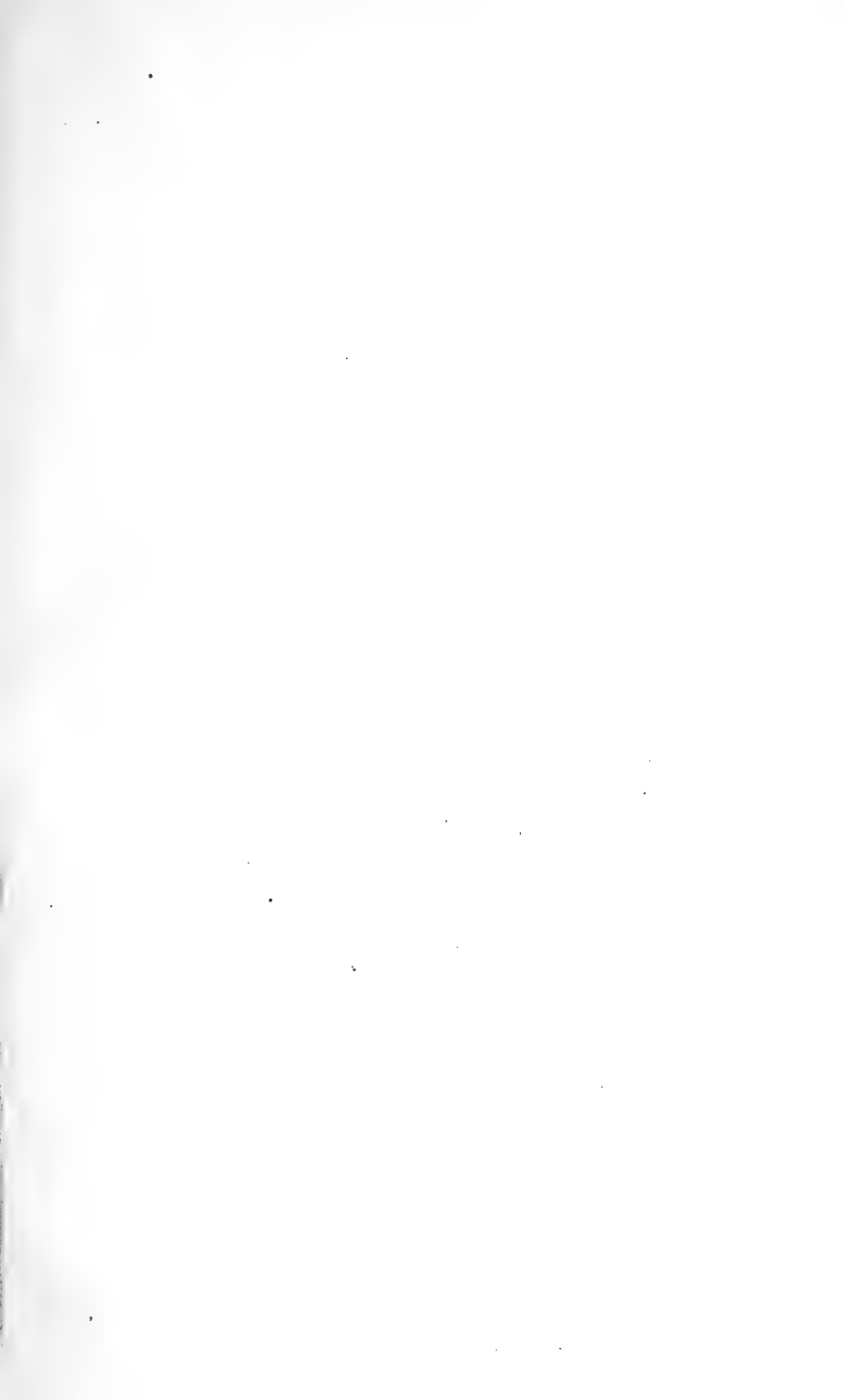
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